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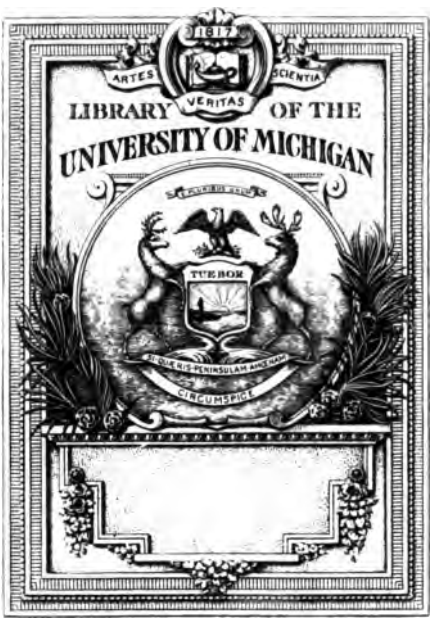

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LANCASHIRE AND CHESHIRE

VOLUME VIII.

SESSION 1855-56.

LONDON:
J. H. PARKER, 377, STRAND.

1856.

LIVERPOOL:
T. BRAKELL, PRINTER, COOK STREET.

This Volume, like all the preceding ones, has been edited by the Honorary Secretary, under the direction of the Council. The writers of Papers, however, are alone responsible for the facts and opinions contained in their respective communications.

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EXPLANATORY NOTE.

Of the Sixteen illustrations contained in this volume, only eight have been produced wholly at the cost of the Society. These are I, IV, V, VI, VII, VIII, IX, X.

Nos. II and III were presented complete, by Mr. Marsh, in illustration of his own paper.

No. XVI was in like manner presented complete, by the Rev. John James Moss, M.A., in illustration of his own remarks on Watches.

The use of the Plates XI, XII, XIII, XIV and XV was granted by the British Association for the Advancement of Science, through Professor Phillips. The use of the standing forms, for printing the Tables to which these plates refer, was granted in like manner by the British Association. (*See page* 212.)

This portion of the printing was executed by Messrs. Taylor and Francis, London.

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The HIGH SHERIFF OF CHESHIRE.	JOHN HARTNUP, F.R.A.S.

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THOMAS G. WEDGWOOD, Esq.

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*In accordance with Law xx, the Council added the following members from the Society to the Sectional Committees:—

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LITERATURE—Messrs. H. A. Bright, William Burke, Alfred Hunt, and Alex. MacIlveen.

SCIENCE—Messrs. William Bean, George M. Browne, Henry Cauty, and William Milner.

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SESSION 1855-6.

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The letter P. denotes that the Members in connection with whose names it occurs, have read Papers before the Society.

Those whose names are printed in SMALL CAPITALS are Members of the Council; and in *italics* are Life Members.

Those marked thus * are Resident. The post town Liverpool is usually omitted.

A

18th Oct., 1854. Abraham, Rev. Thomas Edward, M.A., Bickerstaffe, Ormskirk.
23rd Nov., 1848. *Ainslie, Montague*, Grizedale, Hawkshead, Lancashire.
23rd Nov., 1848. *Alexander, William L., 4, Mount Vernon Green, and 2, Harrington Street.
6th Dec., 1855. *Allcard, William*, Bank House, Warrington.
18th Sept., 1854. *Allport, William, Merton Cottage, Bootle.
10th Feb., 1853. *Anderson, Robert Worrall, 23, Falkner Square.
3rd May, 1849. *Anderson, Thomas Francis, Holly Lodge, Fairfield, and 3, Cable Street.
23rd Nov., 1848. Ansdell, Richard, 7, Victoria Road, Kensington, London.
15th Sept., 1854. Arrowsmith, P. R., The Ferns, Bolton.
14th Sept., 1854. *Arthure, Rev. Benedict, B.A., Tranmere.
11th May, 1854. Aspland, Rev. R. Brook, M.A., Dukinfield, Ashton-under-Lyne.
14th Dec., 1848. *Astley, John, 18, Salthouse Dock, and Rock Ferry, Cheshire.
4th April, 1850. Aston, Walter, Chadderton Hall, and Blue Boar Court, Cross Street, Manchester.
P. 9th Oct., 1854. Atherton, Henry, Sutton, Prescot.
8th Nov., 1849. Atkinson, Fenton Robinson, Oak House, Pendleton, Manchester.
23rd Nov., 1848. *AVISON, THOMAS, F.S.A., Fulwood Park, Aigburth, and 16, Cook Street, TREASURER.

B

23rd Nov., 1848. *Badnall, Rev. William, M.A., Wavertree.
P. 23rd Nov., 1848. *Baines, Thomas, Oakfield, Little Woolton.

8th June, 1854. *Banning, John Johnson, 20, Castle Street.
15th Dec., 1853. Barlow, T. Worthington, F.L.S., St. James's Chambers, Manchester.
Mayor Man., 1851-53. Barnes, Robert, Brookside, Manchester.
13th Dec., 1855. Barton, Henry Campbell, Fishergate, Preston.
6th Dec., 1855. *Batty, Edward, 34, Stafford Street.
23rd Nov., 1848. *Baylee, Rev. Joseph, D.D., Principal of St. Aidan's College, Birkenhead, Claughton Road, Woodside.
P. 6th Dec., 1849. Beamont, William, Warrington.
30th Dec., 1854. *Bean, William, Revenue Buildings, and 21, Wellington Road.
10th Sept., 1854. *Bedford, James, Ph.D., Fort Terrace, New Brighton.
23rd Nov., 1848. *Bell, Henry, 16, North John Street, and Grosvenor Road, Claughton, Birkenhead.
6th April, 1854. Bell, John Gray, 11, Oxford Street, Manchester.
15th Nov., 1854. *Belshaw, John, Wason Buildings, 4, Harrington Street.
P. 9th Dec., 1852. *Benn, Edward, Vauxhall Distillery.
23rd Nov., 1848. *Bennett, William, 109, Shaw Street.
Mayor Li., 1850-1. *Bent, Sir John, 1, Rake Lane, Edge Hill, and 30, Johnson Street.
23rd Nov., 1848. *Bickersteth, Robert, 2, Rodney Street.
7th March, 1850. Birch, Sir Thomas Bernard, Bart., The Hazles, Prescot.
23rd Nov., 1848. Birchall, Thomas, Ribbleton Hall, Preston.
23rd Nov., 1848. *Bird, William, 9, South Castle Street, and the Dell, Rock Park, Rock Ferry.
4th March, 1852. Birley, Rev. John Shepherd, Halliwell Hall, Bolton.
P. 8th Jan., 1852. Birley, T. Langton, Carr Hall, Kirkham.
6th Dec., 1855. Black J., M.D., F.G.S., Southport.
20th Sep., 1854. *Blackmore, William, 2, Exchange Street, East, and Sutton, Cheshire.
23rd Nov., 1848. Blackburne, John Ireland, The Hall, Hale.
1st Sep., 1854. *Blakeney, Rev. John, B.A., Oxton.
26th Sep., 1854. Bloxam, Frederick William, Alliance Bank, Threadneedle street, London.
23rd Nov., 1848. *Blundell, Thomas Weld, Ince Blundell, Great Crosby.
P. 15th Dec., 1853. *Boardman, James, Sailors' Home, and Huskisson street.
P. 30th Dec., 1854. Bööck, Frederick Robert Paul, 86, Newman Street, Oxford Street, London.
5th May, 1853. Booth, Benjamin Witham, Swinton, Manchester.
1st May, 1856. Booth, John Billington, Preston.
15th Dec., 1853. *Bossi, Arthur, 9, Rumford Place.
31st Sep., 1854. Bostock, Rev. H., M.A., Grammar School, Warrington.
3rd Jan., 1856. *Bouch, Thomas, 1, Old Hall Street, and New Brighton.
23rd Nov., 1848. *Boult, Francis, Rumford Place, and Clifton Park, Birkenhead.
P. 23rd Nov., 1848. *Boult, Joseph, Harrington Chambers, and Grove Park, Lodge Lane.
8th Dec., 1851. Bourne, Cornelius, Stalmine Hall, Preston
6th Dec., 1855. Bowes, John, Blue Coat School, Warrington.
29th Dec., 1854. *Boyd, Andrew, 21, Nile Street.
6th April, 1840. *Brackley, the Viscount*, M.P., Worsley Hall, Manchester.
13th Nov., 1851. Brackstone, R. H., Lyncombe Hill, Bath.
15th Dec., 1853. Bradbury, Charles, Salford Crescent, Manchester.

23rd Nov., 1848. *Brakell, Thomas, 7, Cook Street, and 23, Richmond Terrace, Everton.
30th Dec., 1854. Brent, Francis, Custom House, Folkstone.
9th March, 1854. *Bright, Henry Arthur, Sandheys, West Derby, and 1, North John Street.
3rd May, 1849. Brooke, Henry, Forest Hill, Northwich.
6th March, 1851. *Brooke, Richard, jun.*, Norton Priory, Runcorn.
13th Sep., 1854. *Brounlie, Charles, 19, Tower Chambers.
23rd Nov., 1848. **Brown, William, M.P.*, 7, Chapel Street, and Fenton's Hotel, London.
6th Jan., 1853. *Brown, Rev. Hugh Stowell, 118, Chatham Street.
23rd Sep., 1854. *Brown, John*, F.R.G.S., F.R.S., of North Antiq. Copenhagen, 3, Newcastle Place, Clerkenwell Close London.
15th Mar., 1855. *Browne, G. Mansfield, 15, South Hill, Park Road.
11th Sep., 1854. *Burke, William, 160, Grove Street.
17th Sep., 1854. Burnell, Rev. Samuel, M.A., Winwick, Warrington.
Mayor La., 1853-4. Burrell, John Stamp, Lancaster.
9th Dec., 1852. Bury, Edward, F.R.S., Sheffield.
P. 15th Dec., 1853. *Buxton, David, Principal of the Liverpool Deaf and Dumb Institution, Oxford Street.
2nd Nov., 1854. Buxton, Edward, Principal of the Cambrian Deaf and Dumb Institution, Swansea.
23rd Nov., 1848. *Byrne, Andrew Euing, 30, Hackin's Hey, and 8, Kenyon Terrace, Claughton, Birkenhead.

C

23rd Nov., 1848. *Caine, Nathaniel, 12, Dutton Street.
6th Dec., 1855. Calvert, F. Crace, F.C.S., M.R.A. Turin, Royal Institution, Manchester.
23rd Nov., 1848. *Campbell, Rev. Augustus, M.A., The Vicarage, Childwall, and 131, Duke street.
8th Jan., 1852. Campbell, Rev. Colin,‖ M.A., St. Thomas's, Lancaster.
4th April, 1850. *Carlisle, His Excellency the Earl of*, Lord Lieutenant of Ireland, The Castle, Dublin.
23rd Nov., 1848. *Carson, Thomas, Talbot Chambers, Fenwick street, and 3, Northumberland Terrace, Everton.
6th Dec., 1849. *Casson, William, 39, Parliament street, and 3, Great George square.
27th Sep., 1854. *Casey, George, Naylor Street, and Walton.
26th Sep., 1854. *Cauty, Henry John, 31, Norton street.
H.Sh. Chesh., 1855-6. *Chapman, John*, Hill End, Mottram-in-Longdendale.
14th Sep., 1854. *Chantrell, G. F., 150, Dale street.
Cheshire, the High Sheriff of, Vice-President, *ex officio*. (Richard Naylor, Esq., Hooton Hall.)
2nd June, 1853. *Chester, the Lord Bishop of*, the Palace, Chester.
23rd Nov., 1848. *Clare, John Leigh, Richmond Terrace, Breck Road, and 11, Exhange Buildings.
P. 23rd Nov., 1848. Clayton, Rev. George, M.A., Warmingham Rectory, Middlewich.
P. 12th Jan., 1854. *Clements, John, 6, Colquitt street.
10th Nov., 1854. Colston, Rev. John, Quarry Bank, Wilmslow, Cheshire.

‖ Dead, 1856.

1st Feb., 1849. *Colton, John Caspar, 7, Oldhall street, and Rainhill.
24th May, 1855. *Comber, Thomas, 33, Edge lane.
23rd Nov., 1848. *Conway, John, Cable street.
8th Sep., 1854. *Cornish, Thomas, 7, Sugnall street.
23rd Nov., 1848. Coulthart, John Ross, F.S.A. Scot., Mayor of Ashton-under-Lyne, Croft House, Ashton.
31st Oct,, 1854. *Cox, Henry, 15, Exchange Alley North.
6th Dec., 1849. *Crosfield, Henry, 4, Temple Place, and Edgemount, Edge Lane.
6th Dec., 1855. *Cross, James L., 6, Sandon Terrace.
1st Mar., 1855. *Crosse, John Norman, F.S.S., 15, Myrtle street, and 2, Exchange Chambers.
23rd Nov., 1848 Crosse, Thomas Bright, Shawe Hill, Chorley.
2nd May, 1850. Crossley, James, F.S A., President of the Chetham Society, Booth street, Manchester.
23rd Nov., 1848. *Cunningham, John, F.G.S., Hon. Mem. Roy. Corn. G.S., Cook st., and Beech Bank, Liscard, Cheshire.
P. 23rd Nov., 1848. *CUST, MAJOR-GEN, the HON. SIR EDWARD, K.C.H., D.C.L., F.R.S., Leasowe Castle, Cheshire, and Hill street, London, PRESIDENT.

D

8th Dec., 1851. Dale, Rev. P. S., M.A., Mytholme Lodge, Hollins Green, Warrington.
8th Dec., 1851. *Dale, Robert Norris, 2, Hargreaves' Buildings, Exchange, and 1, Richmond Terrace, Breck Road
23rd Nov., 1848. Danby, Rev. Francis Burton, M.A., County Asylum, Lancaster.
P. 29th Dec., 1851. *DANSON, JOHN TOWNE, F.S.S., Carnsdale House, Barnston, Birkenhead, VICE-PRESIDENT.
6th Feb., 1851. Darlington, Richard, Wigan.
23rd Sept., 1854. *Davies, Comenius, 134, Paddington, Edge Hill.
6th March, 1856. *Daw, Robert, F.B.S.E., &c., 26, Sandon street.
P. 23rd Nov., 1848. Dawes, Matthew, F.S.A., F.G.S., Westbrooke, Bolton.
10th Feb., 1853. Dawson, Pudsey, Hornby Castle, Lancashire.
23rd Nov., 1848. **DAWSON HENRY*, 20, Redcross street, and 14, St. James's Road.
2nd May, 1850. *Dawson, Thomas, Rodney street.
23rd Nov., 1848. Dearden, James, F.S.A., Upton House, Poole.
6th April, 1850. De Tabley, The Lord, Tabley Hall, Cheshire.
7th May, 1851. **Dickinson, Joseph*, M.A., M.D., F.R.S., F.L.S., M.R.I.A., 5, Nelson street.
P. 20th Dec., 1855. Dobson, William, Chronicle Office, Preston.
P. 7th March, 1853. *Dove, Percy M., F.S.S., F.I.B.A., Royal Insurance Office, 1, North John street, and 49, Hamilton Square, Birkenhead.
23rd Nov., 1848. *Duarte, Ricardo Thomaz, 2, Royal Bank Buildings.
13th Sept., 1854. *Duncan, Thomas, 18, West Derby street.
23rd Nov., 1848. *Dunlevie, Charles Thomas,

E

9th Dec., 1852 Eckersley, Thomas, Wigan.

8th Dec., 1851. *Edgar, James, Revenue Buildings, Custom House.
25th Sept., 1854. *Edmondson, Henry, 4, Stafford street.
P. 23rd Nov., 1848. *Egerton, Sir Philip de Malpas Grey*, Bart., M.P., F.R.S., F.G.S., Oulton Park, Tarporley.
23rd Nov., 1848. *Ellesmere, the Earl of*, F.R.S., F.S.A., F.L.S., F.G.S., Worsley Hall, Manchester, and 18, Belgrave Square, London.
3rd March, 1853. *Ellis, William, 28, Kensington.
6th Dec., 1855. *Estill, Edward, 9, Orange Court, Castle street.
23rd Nov., 1848. *Evans, Edward, 52A, Hanover street.
15th Sept., 1854. *Evans, H. Sugden, F.C.S., 52A, Hanover street.
8th Nov., 1849. *Evans, Thomas Bickerton, 52A, Hanover street.
23rd Nov., 1848. *Ewart, Joseph Christopher, M.P., 64, Pall Mall, London, and New Brighton.
6th May, 1852. *Ewart, William*, M.P., 6, Cambridge Square, Hyde Park, London.
7th Feb., 1850. Eyton, Peter Ellis, Town Hall, Flint.

F

23rd Nov., 1848. Feilden, John, Mollington Hall, Chester.
11th Sept., 1854. Ferguson, William, F.L.S., F.G.S., F.R.G.S., 1, Torrington Square, London.
23rd Nov., 1848. *Finlay, William, Collegiate Institution.
23rd Nov., 1848. *Fisher, William M., Ph.D., F.R.A.S., 39, Great George street.
6th Dec., 1849. *Fleming, Thomas, 22, Sandon street, and 58, Castle street.
5th Dec., 1850. *Forster, Wilson, Willow Bank, Anfield, West Derby, and 36, Dale street.
23rd Sept., 1854. *Forwood, T. B., 33, North John Street
15th Dec., 1853. Franks, Augustus Wollaston, M.A., F.S.A., British Museum, London.
6th Jan., 1853. *French, Gilbert James*, Corr. Mem. S.A Scot., Bolton.

G

14th Dec., 1848. *Gardner, Richard Cardwell, Colonial Buildings, 34, Dale Street, and Newsham House.
15th Dec., 1853. *Gardner, Rev. Thomas, M.A., Stanley.
30th Dec., 1854. Garner, Charles,‖ Queen Street, Cheapside, London.
31st Oct., 1854. Garner, James Pepper, Queen Street, Cheapside, London.
3rd May, 1849. Garnett, William James, Bleasdale Tower, Garstang.
23rd Nov., 1848. *Gaskell, John, Exchange Court, Exchange Street East.
7th Feb., 1850. *Gath, Samuel, 137, Finch Street.
7th March, 1850. *Gill, Robert, 1, Chapel Street, and Much Woolton.
9th Dec., 1852. *Graves, Samuel Robert, 13, Redcross Street.
7th Feb., 1850. *Gray, John, 16, St. Clement's Terrace, Windsor, and 25, Strand Street.
21st Sep., 1854. Gray, Rev. R. H., M.A., Kirkby, Prescot.

‖ Dead, 1856.

14th Dec., 1848. *Gray, Thomas, Royal Insurance Office, 1, North John Street.
6th Feb., 1851. Gray, William, Wheatfield, Bolton.
20th Dec., 1855. *Grazebrook, George, 40, Canning Street.
7th Feb., 1850. *Green, Robert Molyneux, 14, Rupert Lane, Everton.
16th Sep., 1854. *Green, Thomas, 34, Chapel Street.
23rd Nov., 1848. Greenall, Rev. Richard, M.A., Incumbent of Stretton, R.D., Stretton, Warrington.
23rd Sep., 1854. Greene, John Stock Turner, the Hallhouse, Leigh.
31st Aug., 1854. Grenside, Rev. William Bent, M.A., Melling Vicarage, Lancaster.
8th Nov., 1849. *Guyton, Joseph, 10, Bridson Street, Falkner square.

H

20th Sep., 1854. Hadwen, Joseph, Fairfield, near Manchester.
2nd May, 1850. *Hall, William, Seaforth.
Mayor La. 1852-53. Hall, John, Lancaster.
25th Sep., 1854. *Hamilton, Rev. Charles J., B.A., Hemingford Terrace, Birkenhead.
8th Dec., 1851. *Hammond, William John, 50, Stafford Street, and 27, Lord Street.
23rd Nov., 1848. Hampton, Rev. H. M.A., 3, Lowther Cottages, Holloway, London.
19th April, 1855. *Harding, Augustus, 25, Chapel Walks, South Castle Street.
30th Dec., 1854. *Hardman, J. W., B.A., South Hill Place.
P. 6th Mar., 1856. Hardwick, Charles, Preston.
P. 8th Nov., 1849. Harland, John, F.S.A., Guardian Office, Manchester.
5th May, 1853. Harrison, William, Rock Mount, St. John's, Isle of Man.
12th Jan., 1854. *Harrison, William*, Galligreaves House, Blackburn.
9th Dec., 1852. *Harrison, Henry Walter, 5, Rodney Street, and 27, Castle Street.
9th Feb., 1854. *Harrowby, the Earl of*, D.C.L., F.R.S., Sandon Hall, Staffordshire, and 39, Grosvenor Square, London.
10th Feb., 1853. *Hartley, Jesse, Derby Road, Bootle, and Dock Office.
10th Feb., 1853. **Hartley, John Bernard*, Aigburth, and Dock Office.
P. 11th Oct., 1854. *Hartnup, John, F.R.A.S., Observatory, Vice-President.
23rd Nov., 1848. Hawkins, Edward, F.R.S., V.P.S.A., F.L.S., British Museum, London.
22nd Sep., 1854. *Hawthorne, Nathaniel, U.S. Consulate.
3rd May, 1849. *Hay, John, 2, Cable Street, and Parkfield Cottage, Birkenhead, Cheshire.
27th Sep., 1854. *Healy, Samuel R., 48, Castle Street, and Westbank House, Walton.
23rd Nov., 1848. *Heath, Edward, Orange Court, Castle Street, and St. Domingo Grove, Everton.
24th Oct., 1854. Heginbottom, George, Albert Terrace, Ashton-under-Lyne.
11th May, 1854. Henderson, Ebenezer, LL.D., Greenbank, St. Helens.
8th May, 1856. *Henderson, William, 41, Church Street.
8th June, 1854. *Herd, John, Brunswick street.
23rd Nov., 1848. *Herdman, William Gawin, West Villa, St. Domingo Vale, Everton.

23rd Nov., 1848. *Heywood, Sir Benjamin, Bart.*, F.R.S., F.S.S., Claremont, Manchester.
P. 23rd Nov., 1848. *Heywood, Thomas*, F.S.A., Hope End, Ledbury, Herefordshire.
H. Sher. Lanc. 1855-6. *Heywood, John P., Brunswick Street, and Norris Green, West Derby.
3rd April, 1856. Hibbert, Joseph, Brookbank, Hyde, Cheshire.
P. 4th Jan., 1849. Hibbert, Thomas Dorning, Middle Temple, London.
P. 23rd Nov., 1848. Higgin, Edward, Blomfield House, Westbourne Terrace North, Paddington, London.
6th Dec., 1849. *Higgin, Thomas, 6, Sweeting Street.
12th Sep., 1854. Higgins, Rev. H. H., M.A., F.C.P.S., Asylum, Rainhill.
P. 23rd Nov. 1848. Hill, Rev. John Wilbraham, M.A., Waverton, Cheshire.
26th April, 1855. Hinde, Rev. Edmund, M.A., Carrington, Cheshire.
P. 8th Dec., 1851. Hinde, John Hodgson, 9, Saville Row, Newcastle-on-Tyne, and Acton House, Felton, Northumberland.
11th May, 1854. *Hindley, Edward, 34, Exchange Street East.
18th Sept., 1854. *Hindley, Rev. Hugh Johnson, S.C.L., St. George's, Everton.
23rd Sept., 1854. *Hindmarsh, Fred.*, F.G.S., F.R.G.S., Bucklersbury, London.
16th Sept., 1854. *Hodson, Thomas L., 39, Islington.
Mayor Li. 1852-3. *Holme, Samuel, Church Street, and Holmestead, Aigburth.
24th Sept., 1854. *Holt, William D., 23, Edge Hill.
26th Sept., 1854. *Hore, Edmund Joseph, 6, George's Dock Gates.
20th Sept., 1855. *Horner, Francis, 33, Everton Road.
23rd Nov., 1848. *Horsfall, Thomas Berry, M.P., Mill Bank, West Derby.
14th April, 1853. **Houghton, Richard*, Crosby.
P. 8th Nov., 1849. *Howson, Rev. John Saul, M.A., Principal of the Collegiate Institution.
Mayor La. 1849-50. Howitt, Thomas, Lancaster.
27th Sept., 1854. *Hubback, Joseph, 27, Lower Castle Street, & Aigburth.
14th Sept., 1854. *Hughes, Joseph, 2, Upper Duke Street, and 9, Brownlow Hill.
16th Sept., 1854. *Hughes, J. B., 59, Mill Street.
6th April, 1854. Hughes, Thomas, 4, Paradise Row, Chester.
8th Feb., 1852. Hulton, William Adams, Hurst Grange, Preston.
Mayor C, 1851-2. Humberston, Philip Stapleton, Chester.
P. 23rd Nov, 1848. *Hume, Rev. Abraham, D.C.L., LL.D., F.S.A., Corr. Mem. S.A. Scot., 24, Clarence street, Everton, Hon. Secretary.
9th Feb., 1854. *Hunt, Alfred W., B.A., 31, Oxford street.
9th Dec., 1852. *Hutchison, Robert, Tower Buildings, and Canning street.

I

9th Oct., 1854. Ingham, Rev. Thomas Barker, M.A., Rainhill.

J

1st April, 1852. *Jacob, John Gibborn, 56, Church street.
23rd Nov., 1848. Jacson, Charles R., Barton Lodge, Preston.

23rd Nov., 1848. James, Rev. David, M.A., F.S.A., Ph.D., Marsden, Huddersfield.
23rd Nov., 1854. *Jeffery, William R., 8, Montpelier Terrace, Upper Parliament street.
18th Sept., 1854. *Johnson, Henry, Walton.
23rd Nov., 1848. *Johnson, John H., 7, Church street.
3rd April, 1856. *Jones, Venerable John, M.A., Archdeacon of Liverpool, Waterloo.
23rd Nov., 1848. *Jones, Alfred, 17, Goree Piazzas.
23rd Sept., 1854. *Jones, Edward, 3, Grinfield Terrace, Edge Hill.
3rd May, 1849. *Jones, Morris Charles, 75, Shaw street.
6th Dec., 1849. *Jones, Roger Lyon, 1, Great George Square.
15th Sept., 1854. Jones, Thomas, B.A., Chetham Library, Manchester.

K

23rd Nov., 1848. *Kendal, Thomas, 9, Gambier Terrace.
P. 3rd May, 1849. Kendrick, James, M.D., Warrington.
1st Feb, 1840. *Kilpin, Thomas Johnson, 1, Arrad street, Hope street.

L

15th Dec., 1853. *Lace, William Henry, 1, Union Court, Castle street, and Beaconsfield, Woolton.
P. 23rd Nov., 1848. *Lamb, David, Plumpton Terrace, 29, Everton Road.
14th Mar., 1852. *Lambert, David Howe, 10, Exchange Chambers, Tithebarn street, and Bedford street.
LANCASHIRE, THE HIGH SHERIFF OF, VICE-PRESIDENT, *ex-officio*. (Robert Needham Phillips, Esq., the Park, Manchester.)
23rd Nov., 1848. Langton, William, Manchester.
21st Sept., 1854. *Lea, James, Surveyor, Egremont, Cheshire.
6th Dec., 1849. *Ledger, Reuben, Knotty Ash.
1st April, 1852. Lee, Rev. Thomas Falkner, M.A., Grammar School, Lancaster.
23rd Nov., 1848. Legh, G. Cornwall, M.P., High Legh, Warrington.
25th Sept., 1855. *Lidderdale, William, 42, Canning street.
4th April, 1850. *Lilford, the Lord, Oundle, Northamptonshire, and Grosvenor Place, London.
23rd Nov., 1848. *Lingard, Alexander Rowsand, Eastham.
23rd Nov., 1848. *Lister, James, Union Bank.
Mayor Li, 1851-2. *Littledale, Thomas, Highfield House, and 13, Exchange Buildings.
*LIVERPOOL, THE MAYOR OF, VICE-PRESIDENT, *ex officio*. (John Stewart, Esq., Leigh Street, and Mount Pleasant.)
19th Sept., 1854. *Livingstone, Henry D., B.A., at Gibbs, Bright & Co.'s, North John street.
14th Dec., 1848. *Lloyd, John Buck, Exchange Alley, Exchange street West, and Aigburth.
6th Jan., 1853. *Longton, John, Breck Road, and Peter's Place, Rumford street.
P. 23rd Nov., 1848. **Lord, Lieut. William*, R.N., 16, Sandon street.

23rd Nov., 1848. *Lowndes, Matthew Dobson, 7, Brunswick street, and Edge Lane.
14th April, 1853. Lyon, Thomas Henry, Appleton Hall, Warrington.
6th Dec., 1849. Lyon, Thomas, Appleton Hall, Warrington.

M

21st Sep., 1854. *MacIlveen, Alexander, Principal of the Liverpool Institute, Sandon Terrace.
3rd March, 1853. *Macintyre, Peter, M.D., 128, Duke street.
6th Dec., 1855. *Macfie, David Johnson, 1, Bachelor street.
27th Sep., 1854. *Macfie, R. A., 72, Upper Parliament street.
16th Sep., 1854. Mackreth, Rev. Thomas, B.D., Halton Rectory, Lancaster.
5th May, 1853. *_Macrae, John Wrigley_, Edge Lane, and 22, Hackin's Hey.
23rd Nov., 1848. *Macrorie, David, M.D., 126, Duke street.
3rd Jan., 1849. _Manchester, the Lord Bishop of_, Sedgley Hall, Manchester.
23rd Nov., 1848. Markland, James Heywood, D.C.L., F.R.S., F.S.A., Bath.
23rd Nov., 1848. *Marsden, George, Vernon Priory, Edge Hill.
P. 5th June, 1851. Marsh, John Fitchett, Fairfield House, Warrington.
9th Mar., 1854. *Mason, William Ithell, 14, Lower Hope Place.
23rd Nov., 1848. *Mather, Daniel, 58, Mount Pleasant.
23rd Nov., 1848. *Mather, John, 58, Mount Pleasant.
P. 23rd Nov., 1848. *Mayer, Joseph, F.S.A., M.R.Asiat.S., F.E.S., F.R.S. North. Antiq. Copenhagen, Hon. Mem. SS. Antiq., Normandy, l'Ouest, the Morini; de la Société d'Emulation, Abbeville, &c., 68, Lord street, Curator.
7th Feb., 1850. Mayer, Samuel, Newcastle-under-Lyne.
23rd Nov., 1848. *M'Quie, Peter Robinson, Low Hill, and 20, Water street.
6th Dec., 1849. *M'Viccar, Duncan, Abercromby Terrace, and 7, Exchange Buildings.
24th May, 1855. Melling, Thomas, C.E., Rainhill.
P. 6th Dec., 1849. *Middleton, James, F.S.A., Grecian Terrace, Everton.
P. 31st Dec., 1854. *Milner, William, 2, Downshire Terrace, Upper Parliament street, and 6, Lord street.
Mayor Li, 1848-9. *Moore, John Bramley, M.P., Hon. Mem. Archæological Association, Carioca Lodge, Aigburth, and Orange Court, Castle street.
23rd Nov., 1848. *Moore, Thomas, 32, Chapel Walks, and 10, Beaufort Terrace, Seacombe, Cheshire.
P. 8th Nov., 1849. *Moore, Rev. Thomas, M.A., 25, Newbie Terrace, Everton, Librarian.
P. 23rd Nov., 1848. Mortimer, William Williams, City Walls, Chester.
P. 23rd Nov., 1848. *Moss, Rev. John James, M.A., Upton, Cheshire.
7th Mar., 1850. *Mott, Albert J., 21, South Castle street, and Orchard Hey, Preston Road, Walton.
18th Sep., 1854. *Mott, Charles Grey, 7, Argyle street, Birkenhead, and 2, Parliament Terrace, Upper Parliament street.
19th Sep., 1854. *Musker, Roger Melling, Walton.

N

23rd Nov., 1848. *Neill, Hugh, F.R.A.S., 115, Mount Pleasant.
6th Dec., 1855. *Newton, John, 15, West Derby street.
23rd Nov., 1848. Nicholson, James, F.S.A., Thelwall Hall, Warrington.
25th Sep., 1854. *Nisbett, William, Church street, Egremont.
6th Dec., 1849. *North, Alfred, 33, Huskisson street.
29th Sep., 1854. *Nottingham, John, M.D., 18, Roscommon street.
13th Dec., 1854. NUTTALL, THOMAS, F.L.S., Nut Grove, Rainhill.

O

2nd Jan., 1851. *Oates, Capt. W. C.*, Cavendish Place, Bath.
P. 6th Dec., 1849. Ormerod, George, D.C.L., F.R.S., F.S.A., F.G.S., Sedbury Park, Chepstow.
6th Feb., 1851. Osborne, John James, Macclesfield.
3rd Jan., 1850. *Overend, James, 45, Hope street.

P

23rd Nov., 1848. *Paris, Thomas Jeremiah, 68, Lord street.
3rd Jan., 1850. *Parker, Charles Stewart, Bank Chambers, Cook street.
1st May, 1856. Parr, Rev. H., Vicarage, Taunton.
7th Mar., 1850. *Patten, John Wilson*, M.P., Bank Hall, Warrington.
2nd Nov., 1854. Patterson, Andrew, Principal of the Deaf and Dumb Institution, Manchester.
9th Oct., 1854. *Peacock, John, 2, Chapel street.
23rd Nov., 1848. Pedder, Edward, Ashton Park, Preston.
23rd Nov., 1848. Pedder, Richard, Stanley Terrace, Preston.
8th Dec., 1851. Perrin, Joseph, The Crescent, Levenshulme, Manchester.
P. 6th Jan., 1849. *Picton, James Allanson, F.S.A., 19, Clayton square, and Sandy Knowe, Wavertree.
10th Sept., 1854. *Picton, John, 65, Hunter street.
6th Dec., 1849. *Pierce, George Massey, 4, Exchange Alley, and Linacre Marsh.
3rd May, 1849. Pierpoint, Benjamin, Warrington.
23rd Nov., 1848. Pilkington, James, M.P., Park Place, Blackburn.
10th Feb., 1853. *Platt, Robert*, Dean Water, Handforth, Manchester.
23rd Nov., 1848. *Poggi, Rev. Dominica Joseph, D.D., New Brighton College, Cheshire.
6th Dec., 1849. *POOLE, JOHN, 23, Oxford street.
29th Dec., 1854. Porter, Rev. Jas., M.A., St. Peter's College, Cambridge.
Mayor M., 1849-52. Potter, Sir John, Kt., Manchester.
1st Sept., 1854. Preston, Rev. G., M.A., Grammar School, Whalley.
6th Dec., 1849. *Preston, William, 13, Vernon street, and Rock House, West Derby Road.

R

9th Mar., 1854. *Radcliffe, John, Eaton Cottage, Knotty Ash, and 4, Water street.
23rd Nov., 1848. Raines, Rev. Canon, M.A., F.S.A., Milnrow Parsonage, Rochdale.

P. 18th Sept., 1854. *Ramsay, Rev. Arthur, M.A., Hayman's Green, West Derby.
23rd Sept., 1854. *Rathbone, William, 24, Water street, and Greenbank, Wavertree.
21st Sept., 1854. *Rawlins, Chas. Ed., jun. 23, Temple Street, and 4, Windermere Terrace, Prince's Park
15th Mar., 1849. Rawlinson, Robert, C.E., F.G.S, 34, Parliament street, Westminster.
13th Sept., 1854. *Raynes, James Trevelyan, 37, Old Hall street, and Rock Park, Rock Ferry.
23rd Nov., 1848. *Reay, James, Guardian Office, Commerce Court, Lord street.
23rd Nov., 1848. *Reay, Thomas, 87, Church street.
29th Dec., 1854. *Rees, William, 28, West Derby street.
7th Mar., 1850. *Richardson, Samuel, 102, Pembroke Place.
1st Feb., 1855. *Rimmer, Rev. Henry Geo., 6, Breckfield Road south.
15th Nov., 1855. Roberts, Thomas, Kyffin, St. Asaph.
P. 23rd Nov., 1848. Roberts, William John, Cross Mount, Aughton.
14th Dec., 1848. *Robin, John, Chapel Walks, South Castle Street, and Grove Hill, West Kirby, Cheshire.
20th Dec., 1855. Robin, Rev. P. R., M.A., Barnston, Birkenhead.
23rd Nov., 1848. *Robinson, Charles Backhouse, 12, Myrtle Street, and Matilda Grove, Aigburth.
8th Mar., 1853. Robinson, John, Westfield, Huddersfield.
P. 3rd May, 1849. Robson, John, M.D., Warrington.
3rd Jan., 1850. *Ronald, Robert Wilson, 1, Everton Brow.
14th April, 1853. *Ryder, Thomas Bromfield, 2, Elliott Street, Clayton Square.
25th Sept., 1854. Rylands, Peter, Warrington.
P. 13th Dec., 1854. Rylands, Thomas Glazebrook, Warrington.

S

6th Dec., 1855. *Sandbach, W. R., Bank Buildings, Cook street, and The Cottage, Aigburth.
P. 19th Sept., 1854. Sansom, Rev. John, B.A., Buslingthorpe Rectory, near Wragby, Lincolnshire.
P. 7th Sept., 1851. *Sansom, Thomas, A.L.S., F.B.S.E., Local Secretary of the Botan. Soc., London, 33, Everton Road.
23rd Nov., 1848. *Scholefield, Henry D., M.D., 14, Hamilton square, Birkenhead.
8th Jan., 1852. Sharp, John, The Hermitage, Lancaster.
2nd June, 1853. *Sharp, William,* 102, Piccadilly, London.
23rd Nov., 1848. Sharpe, Edmund, M.A., Coedfa, Llanwrst, N. Wales.
25th Sept., 1854. *Shaw, James, 4, Queen square.
1st Dec., 1855. *Shawe, J. R., 16, South John street, and Arrowe Hall, Cheshire.
7th Feb., 1850. *Sherlock, Cornelius, 22, King street.
Mayor La., 1851-2. Sherson, John Herdman, Lancaster.
3rd May, 1849. Shute, Robert, Crediton, Devon.
23rd Nov., 1848. *Simpson, Rev. Samuel, M.A.*, Douglas, Isle of Man.
23rd Nov. ,1848. Skaife, Thomas, Vanburgh House, Blackheath, London.
21st Sept., 1854. Skelton, William, Bruch Hall, Warrington.

2nd May, 1850. **Smith, James*, Brunswick Dock, and Seaforth.
30th Dec., 1854. *Smith, John Peter George, Borough Bank, Water street, and Spring Bank, Breck Road.
16th Sept., 1854. Smith, John, Macclesfield.
6th Jan., 1853 *Smith, William Penn, 26, Hanover street.
23rd Nov., 1848. *Snowball, J. G., 16, Castle street, and 11, Upper Canning street.
2nd Nov., 1854. Stainer, William, Erskine street, Hulme, Manchester.
3rd Jan., 1856. Staniforth, Rev. Thomas, Storrs, Windermere.
13th Dec., 1855. *Steiner, F.*, Hyndburn, Accrington.
30th Dec., 1854. *Stewart, James Gordon, 3, West Derby street.
23rd Nov., 1848. *Stewart, Rev. John, M.A., Sandown Park, West Derby.
23rd Nov., 1848. Stewart, Rev. William, M.A., The Parsonage, Hale.
6th June, 1850. *Stock, John, 7, Exchange Buildings, and Westdale, Wavertree.
P. 23rd Nov., 1848. *Stonehouse, James, 9, Christian street North, Everton.
8th Nov., 1849. *Stuart, William, 1, Rumford Place, and Springfield House, Knotty Ash.
5th June, 1851 Stubbs, Joseph, Park Place, Frodsham.
25th Sep., 1854. *Sumners, Henry, Colquitt street.
21st Sept., 1854. *Surr, John, Everton Valley.
23rd Nov., 1848. *Sutton, Hugh Gaskell, Exchange Court, Exchange Street East, and Woodend, Aigburth.
4th Mar., 1852. *Sykes, James, Colonial Buildings, 34, Dale street, and Breck House, Poulton-le-fylde.
23rd Nov., 1848. Sweetlove, John, M.R.S.L., 41, Edward square, Kensington, London.

T

P. 23rd Nov., 1848. *Thom, Rev. David, D.D., Ph.D., 28, Erskine street, Vice-President.
P. 8th Dec., 1851. Thornber, Rev. William, B A., Blackpool.
13th Sept., 1854. *Thornely, Samuel, 22, Clarence street.
8th Dec., 1851. *Tinne, John A., F.R.G.S., 13, Bank Chambers, Cook street, and Briarley, Aigburth.
Mayor Li. 1854-55. *Tobin, James Aspinall, South John street.
14th Dec., 1848. Tobin, Sir Thomas, F.S.A., Ballincollig, Cork.
22nd Sep., 1854. Topham, Thomas, Castle street, Chester.
8th Jan., 1852. *Torr, John, 15, Exchange Buildings, and Eastham.
5th Dec., 1850. *Tucker, Robert, 11, North View, Edge Hill.
P. 23rd Nov., 1848. *Tudor, Richard A., M.R.C.S., Church View, Bootle.
14th April, 1853. *Turner, Charles, 4, Lancelot's Hey, and Dingle Head.
27th Sep., 1854. *Turner, John Hayward, 52, Rodney street.
6th Dec., 1849. Turner, Edward, High street, Newcastle, Staffordshire.
20th Dec., 1855. *Turner, William, Jun., Stourton, Cheshire.

U

8th Mar., 1854. *Underwood, Rev. Charles W., M.A., Vice-Principal Collegiate Institution.

V

23rd Nov., 1848. *_Varty, Thomas_, Walpole Villa, Fairfield, and Lime street.
14th April, 1853. *Vose, James, M.D., 5, Gambier Terrace, Hope street.

W

Myr. C. 1838-39, 48-49. _Walker, Sir Edward Samuel_, Berry Hill, Mansfield, Notts.
6th Mar., 1851. Warburton, Rowland Eyles Egerton, Arley Hall, Cheshire.
17th May, 1855. *Warburton, Thomas, 122, Falkner street.
6th June, 1850. *Waterhouse, Sebastian, 13, Percy street.
26th Sept., 1854. *Watling, J. W. H., Wavertree.
2nd May, 1850. _Way, Albert_, M.A., F.S.A., Wonham Manor, Reigate, Surrey.
1st Feb., 1849. *Webster, George, 6, York Buildings, Sweeting street, and 7, Northumberland Terrace, Everton.
3rd Jan., 1856. Welton, Thos. A., F.S.S., 147, Fenchurch street, London.
1st Feb., 1849. *_Whitehead, James Wright_, Orange Court, Castle street, and 15, Duke street, Edge Hill.
2nd June, 1853. *Whitley, George, 5, Clayton square, and Spital.
9th Oct., 1854. Whitley, Rev. John, M.A., Newton Rectory, Warrington
6th June, 1850. Whitley, Rev. William, B.A., Catsclough, Winsford, Cheshire.
P. 30th Nov. 1854. Wilkinson, Thomas Turner, F.R.A.S., Corr. Mem. Lit. and Phil. Soc. Manch., Burnley.
14th Sept., 1854. *Willink, Rev. Arthur, M.A., St. Paul's, Tranmere.
8th Jan., 1852. *Willoughby, Edward G., Marine Cottage, Tranmere.
6th Dec., 1855. Wilson, G. F., F.R.S., Belmont, Vauxhall, London.
23rd Nov, 1848. *Winstanley, Samuel T., Church street.
23rd Nov., 1848. Wood, Venerable Isaac, M.A., Archdeacon of Chester, The Vicarage, Middlewich.
23rd Nov., 1848. Wood, Isaac Moreton, M.A., Middlewich.
9th Feb., 1854. Wood, Samuel, F.S.A., The Abbey, Shrewsbury.
10th Feb., 1853. *Wood, Thomas, B.A., Blue Coat Hospital.
7th May, 1851. *_Woodhouse, John George_, 47, Henry street.
3rd Oct., 1854. Woolnough, Rev. Edward, Northenden Rectory, Stockport.
30th Dec., 1854. Worthy, George Smith, Bristol.
5th May, 1853. *Wylie, Alexander Henry, Union Court, Castle street.

HONORARY MEMBERS.

6th Feb., 1851. Akerman, John Yonge, Sec. S.A.; Hon. M.R.S.L.; F.S.A. Newcastle; F.R.S. of Northern Antiquaries; Corr. Mem. SS. Antiq. Scot. France, Russia, Switzerland, Rome; Hon. Mem. Roy. Acad., Stockholm; Somerset House, London.
27th Sept., 1854. Babington, Charles Cardale, M.A., F.R.S., St. John's College, Cambridge.

P. 13th Nov., 1851.	Bell, William, Ph.D., 15, Woburn Buildings, Euston square, London.
6th Feb., 1851.	Blaauw, William Henry, M A., F.S.A., 3, Queen Anne street, London, and Beechland, Uckfield, Sussex.
6th Feb., 1851.	Boileau, Sir John P., Bart., F.R.S., F.S.A., Kettering-ham Hall, Wyndham, Norfolk, and 20, Upper Brook street, Grosvenor Square, London.
27th Sept., 1854.	Brewster, Sir David, K.H., D.C.L., LL.D., F.R.SS.L. & E., Hon. M.R.I.A., St. Andrews, N.B., and Allerby, Roxburghshire.
6th Feb., 1851.	Charlton, Edward, M.D., F.S.A. Newc., 7, Eldon square, Newcastle-on-Tyne.
P. 1st Feb., 1855.	Clarke, Joseph, F.S.A., Saffron Walden, Essex.
8th Jan., 1852.	De Perthes, J. Boucher, de Crevecoeur, Chevalier des ordres de Malte et de Legion d'honneur, membre des diverses Sociétés Savantes, Abbeville.
6th Feb., 1851.	Duncan, Philip B., D.C.L., Oxford.
27th Sept., 1854.	Gray, John Edward, Ph.D., F.R.S., F.Z.S., F.R.G.S., President of the Botan. Soc,. British Museum, London.
27th Sept., 1854.	Latham, R. Gordon, M.D., F.R.S., 22, Upper Southwick street, London.
6th Dec., 1849.	Londesborough, The Lord, K.C.H., F.R.S., F.S.A., President of the Numismatic Society, Grimston, Tadcaster, and 8, Carleton House, Terrace, London.
9th Dec., 1852.	MacAdam, Robert, 18, College square, Belfast.
27th Sept., 1854.	Murchison, Sir Roderick Impey, G.C.St.S., M.A., D.C.L., F.R.S., V.P.L.S., F.G.S., V.P. R. Geogr. S., Hon. M.R.I.A., Director-General of the Geological Survey of Great Britain and Ireland; Trust. Brit. Mus.; Hon. Mem. Acadd. St. Petersburgh, Berlin, Copenhagen; Corr. Mem. Inst. France, &c., 16, Belgrave square, London.
27th Sept., 1854.	Owen, Richard, M.D., LL.D., F.R.S., F.L.S., F.G.S., Royal College of Surgeons, London.
P. 7th May, 1851.	Pidgeon, Henry Clarke, 3, Westbourne Villas, Harrow Road, London. [London Secretary.]
27th Sept., 1854.	Phillips, John, M.A., F.R.S., F.G.S., Magdalen Bridge, Oxford.
27th Sept., 1854.	Rosse, the Earl of, K.P., D.C.L., F.R.S., F.S.A., F.R.A.S., F.G.S., Birr Castle, Parsonstown, Ireland.
27th Sept., 1854.	Sabine, Colonel Edward, R.A., D.C.L., Treas. and V.P. R.S., F.R.A.S., 13, Ashley Place, Victoria Street, London, and Woolwich.
27th Sept., 1854.	Sedgwick, Rev. Adam, M.A., F.R.S., F.G.S., F.R.A.S., Hon. M.R I.A., Woodwardine Lecturer, Trinity College, Cambridge.
6th Feb., 1851.	Smith, Charles Roach, F.S.A., Hon. Mem. SS. Antiq. France, Copenhagen, Normandy, Scotland, Spain, Newcastle, the Morini, Abbeville, Picardy, Wiesbaden, Luxemburg, Treves, Touraine, &c., Temple Place, Strood, Kent.
6th Feb., 1851.	Turnbull, William B.D.D., F.S.A., Scot., 3, Stone Buildings, Lincoln's Inn, London.

6th Feb., 1851	Turner, Dawson, F.R.S., F.S.A., F.L.S., Hon. M.R.I.A., M.R.S.L., Acadd. Caes. Nat. Cur. et Reg. Sc. Holm. Socius, Lee Cottage, Old Brompton, and Athenæum Club, London.
27th Sept., 1854.	Whewell, Rev. William, D.D., F.R.S., F.G.S., F.R.A.S., Hon. M.R.I.A., Master of Trinity College, Cambridge.
6th Feb., 1851.	Williams, Rev. John, M.A., Llanymowddwy, Dinas Mowddwy.
6th Feb., 1851.	Willis, Rev. Robert, M.A., F.R.S., Jacksonian Professor, Caius' College, Cambridge.
P. 27th Sept., 1854.	Wright, Thomas, M.A., F.S.A., Hon. M.R.S.L., Member of the Institute of France; Corresp. Mem. Soc. Antiq. Normandy; of the Roy. Soc. Northern Antiqs. Copenhagen; of Soc. Antiqs. Scotland; and of Comms appointed by French Gov. for publication of Histor Mon., &c.; 14, Sydney street, Brompton, London.

EXTRACTS FROM THE LAWS.

Resident * Members shall pay to the Society One Guinea annually, due in advance, on the 18th of October. Non-resident Members shall pay, in like manner, Half a Guinea. vi.

Any Member whose payments are not in arrear, may become a Life-Member, by paying ten annual subscriptions in one sum. vii.

Any Member whose payments are not in arrear, may withdraw from the Society, on conveying to the Secretary a written intimation to that effect. * * * xi.

Members may be ejected from the Society, for—(1) neglecting to pay their subscriptions† for three consecutive years; or, (2) contemptuous and repeated violation of the Laws. * * * xii.

* Those having addresses in Liverpool, or residing within seven miles of the Town Hall.

† "The Literary and Scientific Institutions Act, 1854," provides for the recovery of Subscriptions to any Institution, "established for the promotion of Literature, Science, or the Fine Arts, or for the Diffusion of Useful Knowledge," by a suit in a Civil Court.

ERRATUM.

Page 221, line 15, for "See p. ii," read "See p. vi."

TRANSACTIONS.

ON THE STATE OF THE WESTERN PORTION OF THE ANCIENT KINGDOM OF NORTHUMBERLAND, DOWN TO THE PERIOD OF THE NORMAN CONQUEST.

By John Hodgson Hinde, Esq.

(Read on the 3rd and 17th of January, 1856.)

The kingdom of Northumberland, in its integrity, comprised the entire district which lies between the Mersey and the Humber to the South, and the Friths of Clyde and Forth to the North. The Northern limits have never been disputed, and, although Dr. Whitaker has suggested that the Ribble, rather than the Mersey, formed its South-western boundary, we have on the other side the unquestionable testimony of the Saxon Chronicle, that Manchester, seated on the latter river, was subject to the Northumbrian kings, not only during the early preponderance of that state, but almost to the close of its existence, a century after the other members of the Heptarchy were absorbed in the monarchy of Egbert. "In the year 923," we read that "King Edward commanded a body of Mercians to take possession of Manchester, *in Northumberland*, and to repair and occupy it." To the South-east, the Humber furnished both a limit and a name to this extensive territory.

If history had been altogether silent, the nomenclature of the district would of itself afford sufficient evidence that a people speaking a language radically different from the Saxon, were its earliest colonists. It is true, that in the names of the towns and villages, we generally find indications of an Anglo-Saxon etymology, and such we should expect to be the case from our experience in all parallel instances. Wherever a new people settle, they invariably give, to their acquired abodes, names which are significant in their own language; and the more complete the extermination or subjection of their predecessors, the more universal the change of topographical

designation. It extends, indeed, not merely to the hamlets which they occupy, but to the fields which they till, and to the hill-sides where their flocks are depastured. If we go beyond this, and inquire amongst the rugged mountains, the crags, the caverns, and, above all, the rivers, we invariably meet with traces of the earlier inhabitants. Throughout the ancient limits of Northumbria, whilst the towns and villages remind us of the Anglo-Saxon settlement, or the more recent domination of the Danes, the rivers and bolder features of the country reveal, in their names, the antient haunts of a Celtic people. If, in other districts of Britain, the traces of this primæval race are faint or uncertain (which, however, I must not be understood to affirm), the case is far otherwise here. In the rivers especially, whether they fall into the Western or Eastern sea, in the Clyde, the Eden, and the Lune, equally with the Tweed, the Tyne, and the Ouse, we have indisputable remains of a Celtic language.

Whatever mixture of race took place previous to Cæsar's invasion, between the Britons and their continental neighbours, was confined, as far as our information extends, to the southern coast of the island—if, indeed, even here the intruders were not descended from the same stock as those amongst whom they established themselves. That the original inhabitants of Gaul were of the same lineage as the Britons has never been questioned; but the more recent settlers in this island were derived from the Belgic, as distinguished from the Celtic portion of that country, and Cæsar tells us, on the authority of the best informed of the Belgian people, that the latter were the descendants of a band of adventurers who had emigrated in comparatively recent times from the German banks of the Rhine. There is no reason to doubt the strict accuracy of this account; nor is it to be wondered that Cæsar, who was no critical ethnologist, accepted this fact as a proof of identity of race between the Belgians and the Germans. We know, however, that the tribes who were familiar to Cæsar as Germans, and whom we still recognize as such, were not the original inhabitants of Germany, but that that vast territory, extending to the sources of the Danube, was possessed in the time of Herodotus by the same Celtic race who occupied Gaul and all Western Europe, to the confines of the *Cynetæ*. Even in Cæsar's time the Germans were but recent colonists in their adopted country, and it is more probable that the Belgæ were the last remnants of the original Celtic population of Germany, and were driven across the Rhine by the invading Germans, than that they

were themselves a portion of the invading host. It is sufficiently wonderful that a district so wide as Germany should have been occupied in a comparatively short period by a people previously unknown to the civilized world, without assigning to them a third of Gaul also, separated as it is from their actual conquests by so formidable a natural barrier as the Rhine. Even, however, admitting the German origin of the Belgæ, and their amalgamation with the maritime tribes of Southern Britain, still, in the district immediately under consideration, the Celtic blood remained unaffected by foreign alliances, when the expedition of Cæsar directed attention to an island previously almost unknown to geographers beyond its name.

After the establishment of the Roman supremacy, there can be no doubt that the exclusively Celtic character of the population was considerably modified; first by the settlement of Roman citizens either holding official appointments or engaged in commerce; secondly, and to a much greater extent, from the legionary and auxiliary forces quartered in the island. If the auxiliary troops had been solely or chiefly derived from one province of the empire, there is no question that their long residence amongst a subject people must have had a tendency to introduce their own customs, arts, and, to a certain extent, their language, amongst the general population; but so far was this from being the case, that amongst the garrisons scattered over the island we find representatives of almost every nation which owed allegiance to Rome, and the influence of each corps must either have been purely local, or, which is more probable, the whole must have merged their provincial peculiarities in their acquired characteristics as Roman soldiers. In this way, the tendency of this vast military establishment was to effect the complete Romanization of the British people. An idea has indeed been put forth by some writers that an element of Saxon, or at least of German, nationality was predominant amongst the auxiliary forces; but this has been advanced without due consideration of the authentic documentary information which we possess on this subject. In the Notitia we have a complete list of all the garrisons in Britain. Excluding the legionary troops, we find eight garrisons of auxiliaries under the command of the Count of the Saxon Shore, of which two only were Germans, a troop of Tungrecani at Dover, and a cohort of Vetasii at Reculver. Under the Duke of Britain we find thirty-six, of which not more than three were Germans, the first cohort of the Batavians, the first cohort of Tungri, and the first cohort of Frixagi, if, indeed, the last were Germans, but their

nationality is not clearly ascertained. Of the other garrisons under the Duke of Britain, thirteen were either not derived exclusively from any particular locality, or their country cannot be determined.* The remaining twenty are derived from no fewer than ten distinct provinces of the Roman Empire, and as the whole were quartered in the district now under consideration, it may be well to mention the number from each, viz.: six from Belgium,† and two from the other provinces of Gaul,‡ five from Spain,§ two from Dalmatia,‖ and one each from Pannonia,¶ Dacia,** Thrace,†† Mauritania,‡‡ and Sarmatia.§§ These garrisons were not mere moveable forces, subject at any time to be transferred from one station to another, but rather military colonies which occupied the same position for ages, as appears from numerous inscriptions commemorating the same troop or cohort, resident in the same locality during a long series of years. Whether each company was recruited from the colony of which it was the nucleus, or by drafts from the province to which it originally belonged, or by indiscriminate enlistment from any quarter, we are not in a condition to determine; neither do we know whether the officers, as well as the men, were provincials, or whether, like our own Indian Army, the officers belonged to the parent state, the men to the provinces, or if any general rule prevailed on this head; and yet all these are considerations which would materially affect the social position not only of the colony but of the district in which it was situated. It is not probable that any considerable portion of the auxiliary forces were withdrawn with the legionary from Britain, when the

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* Equites Catafractarii.
Numerus Vigilum.
Numerus Exploratorum.
Numerus Directorum.
Numerus Defensorum.
Numerus Supervenientum.
Cohors prima Ælia Classica.
Ala Prima Herculea.
Ala Saviniana.
Ala Petriana.
Numerus Pacensium.
Numerus Longovicarisium.
Cohors prima Cornoviorum.

† Numerus Nerviorum.
Cohors tertia Nerviorum.
Cohors sexta Nerviorum.
Cohors secunda Lingonum.
Cohors quarta Lingonum.
Cohors prima Morinorum.

‡ Cohors quarta Gallorum.
Numerus Solensium.

§ Cohors prima Hispanorum.
Numerus Barcariorum Tigrensium.
Ala prima Asturum.
Ala secunda Asturum.
Cohors prima Asturum.

‖ Equites Dalmatæ.
Cohors secunda Dalmatarum.

¶ Equites Crispiani.

** Cohors prima Ælia Dacorum.

†† Cohors secunda Thracum.

‡‡ Numerus Maurinorum.

§§ Cuneus Sarmatarum.

Romans relinquished the sovereignty of the island; many garrisons were no doubt overwhelmed and annihilated, especially on the frontier, by the northern barbarians, and many were probably merged in the general population, with whom they must, from long residence and frequent alliances, have become identified in interest and feelings.

All these considerations seem to point to the conclusion, that on the termination of the Roman power the original Celtic element was still predominant in the population, mixed indeed with many others by a variety of foreign connections, and improved and refined by contact with the Roman citizens. The presence of a Belgian corps in one locality, of a Spanish in another, and of a German in a third, would, to some extent, alter the provincial characteristics in each, but not to such an extent as materially to affect the national character of the Briton civilized by the Roman, or in the appropriate phrase, which has been generally adopted, the Romanized-Briton.

The Saxons are known to us by name as early as the time of Ptolemy, about A.D. 120, but they were then an obscure tribe, sharing, with seven others, the contracted territory of the Cimbric Chersonese; and more than a century and a half elapsed before they did anything to merit the notice of historians. In the year 287, we read of a confederacy of Saxons and Franks, who had made themselves so formidable by their incursions on the coasts of Belgium and Armorica, that a Roman fleet was stationed at Boulogne to check their piracies, and the celebrated Carausius, who afterwards assumed the purple in Britain, was appointed to the command. The shores of Britain were before long subjected to similar devastations, and an officer was appointed, with the title of Count of the Maritime Tract, whose special duty was to defend the Southern and Eastern coasts from the barbarians. In the year 367, the Count of the Maritime Tract was slain, together with his brother-officer, the Duke of Britain, in an incursion of the Picts and Scots. The Saxons do not, at that period, occur amongst the invaders of Britain, but they made a simultaneous movement against the shores of Gaul, which added to the perplexities of the Roman Emperor, Valentinian, and might even have been fatal to his power, but for the vigorous measures taken by his General, Theodosius.

The title given to the guardian of the sea-coast in the Notitia is "Count of the Saxon Shore," and the garrisons under his command extended from

Lyme in Dorsetshire, to the coast of Norfolk, between which points one legion and eight bodies of auxiliaries were stationed in strong positions.

Whilst the imperial government continued, and these garrisons were maintained, it is difficult to believe that any permanent Saxon settlements were effected within the limits specified, nor do historians record any further North, although the coast from the Tyne to the Forth seems to have been altogether unprotected.

The withdrawal of the Roman legions seems to have opened to the Saxons a new sphere of action. Their enterprises were no longer confined to mere predatory expeditions, but they carried out, on a small scale indeed at first, plans of permanent conquest. The first Saxon settlement on record was in the Isle of Thanet, and was subsequently extended to the whole of Kent. The second, and at no distant interval, was at the North-eastern extremity of what was afterwards the kingdom of Northumberland, adjacent, as we read in Nennius, to the great barrier, erected in the reign of Antoninus Pius, between the Forth and the Clyde. We may criticise the narrative of Nennius; we may question his details, and refuse to credit the alleged relationship between the two leaders, Octa and Ebissa, and the Kentish Hengist; but there is no reason to doubt the fact of a very early Saxon settlement in this district. No part of the coast held out greater temptations. The shortness of the voyage, the fertility of the land, the utter want of all means of defence, in a district which had already been drained of its population during the Pictish inroads, were recommendations which were not likely to be neglected, and the fact of a settlement having been effected in this quarter is indirectly confirmed, though not directly stated by Beda. * This early colonization of Lothian is not without interest, as affording materials for speculation on the historical realities of the reign of king Arthur, divested of the absurd legends with which they

* Having briefly noticed the settlement of Hengist and Horsa, in Kent, he proceeds to say, "In a short time, swarms of the aforesaid nations came over into the island, and increased so much, that they became terrible to the nations who had invited them. Then having on a sudden entered into alliance with the Picts, they turned their arms against their former confederates." These new invaders can hardly have been the bands of Aella, or Cerdic, the only leaders whose names occur in the Saxon Chronicle, as invaders of Britain, for many years after the arrival of Hengist. Hengist himself, as well as Aella and Cerdic, had sufficient occupation within the districts in which they severally settled, in the South of Britain, without involving themselves in an offensive alliance with an alien people, at the further extremity of the island. The Saxons who entered into this alliance, must have been neighbours of the Picts, and such were the colonists of Lothian, as described by Nennius.

have been blended. The names, at all events, of several of his battle-fields, exist in the locality, and the ancient name of Lothian itself does not materially differ from that of "the region Linnuis," in which the site of four of these battles is placed by Nennius and Henry of Huntingdon.*

In tracing the establishment of the kingdom of Northumberland, however, we have a void of a century before we reach the times of Ida, from whom, as Beda and the Saxon Chronicle inform us, the Royal race of Northumberland sprung. From this intimation, we are apt to conceive rather exaggerated notions of the magnitude of Ida's kingdom, which was not that of Northumberland, but Bernicia only, one of the petty States out of which that kingdom was afterwards formed. Bernicia itself, in after times, was a province of very considerable magnitude, extending from the Tees to the Frith of Forth, but it would be rash to affirm that the kingdom of Ida enjoyed such ample limits. We know not, indeed, whether Lothian formed any part of it; all that is recorded on this head being the situation of its capital at Bamburgh, within the present county of Northumberland. The reign of Ida lasted twelve years, from A. D. 547 to 560; the reigns of six of his successors occupied thirty-three years. Contemporary with the latter, for thirty years, was Ælla, king of Deira, the district between the Humber and the Tees. In 593, Ethelfrith, the grandson of Ida, succeeded to the throne of Bernicia, to which he added that of Deira also, by the expulsion of Edwine, the son of Ælla, and so established the kingdom of Northumberland. The coast from the Humber to the Forth had been gradually filled with a Saxon population, the original inhabitants having been exterminated, or driven into the interior, after a desperate but ineffectual resistance. Of this struggle we gather a few details from the Saxon genealogies, appended to Nennuis; and several of the lays, yet extant, of the British Bards of the sixth century, are devoted to the praise of the native chieftains, who for a while withstood the onslaught of Ida and his successors. To Ethelfrith was reserved the conquest of the central and Western portion of Northumbria, and we find in the pages of Beda ample testimony to the completeness of his success. "He conquered," as

* "The second, third, fourth. and fifth battles, were on a river called Dubglas, in the region Linnuis." Giraldus Cambrensis applies the name Leonis to Lothian, and in an ancient record, of the reign of Henry II., we find the same district described as Loeneis, a name which still more nearly approximates to Linnuis. Again, if Linnuis be Lothian, we have no difficulty in identifying the Dubglas with the little river Dunglas, which is in that district.

we read, "more territories from the Britons than any other king or tribune;" but though he was thus able to overrun a vast district of country, his followers were not sufficiently numerous to colonise it. In some places, indeed, "he expelled the inhabitants, and placed Angles in their stead," but "in others," and doubtless to a much greater extent, "he allowed the vanquished to retain their lands, on payment of tribute." Even in the succeeding reign of Edwine, the West Riding of Yorkshire retained its British population and form of government, and one of the incidents of which we read, is the expulsion of a petty prince, on the very outskirts of that district, Certic, king of Elmet. The only exploit of Ethelfrith within the Western limits of Northumberland, of which Beda gives any account, is the defeat of Aidan, king of the Scots, at Degsastan, or Dawston, in Liddisdale, but that he was master of the whole country Southwards, to the extreme boundary of Lancashire, may be inferred from the details which we possess of his successful invasion of the present county of Chester. The defeat of Brocmail, at Carlegion, and the slaughter of the monks of Bangor, are familiar to every reader; nor are we without grounds for believing that this victory was followed by the permanent subjugation of the country South of the Mersey, and that Ethelfrith may be regarded as the founder of the Mercian, as well as the Northumbrian kingdom. Crida is indeed described by some of our historians as the first king of Mercia, but he seems to have been the tributary, as he was the contemporary, of Ethelfrith, for his grandson Penda was, as we learn from the Saxon genealogies above referred to, the first of the Mercian rulers who established an independent monarchy, and threw off the yoke of the Northern kings.

Except as regards the absorption of the little kingdom of Elmet, the reign of Edwine does not appear to have been distinguished by any alteration in the internal condition of his dominions. The Anglo-Saxon population were under his immediate government; the petty British States were still ruled by tributary princes. His ambition was rather to extend his authority beyond the limits of his own kingdom, than to consolidate his power at home. In this larger object he was for a while preeminently successful; "he obtained the supremacy over all the nations, as well Angles as Britons, who inhabit Britain;" and he is even said to have subdued Man and Anglesea. The impolicy of his conduct was however apparent in the sequel. The submission of Caedualla, king of North Wales, was neither cordially tendered, nor easy to be enforced, whilst Penda, the tribu-

tary king of Mercia, bore with impatience his dependent position. The union of these two powerful neighbours, aided, in all probability, by the British States within his own territory, exposed him to an invasion on a scale so formidable, that he was unable to offer any adequate resistance, and, although he hastened to meet the enemy with such forces as he could muster, the event of the battle was not only fatal to himself, but destructive to the military power of his kingdom, his troops being all either slain, or hopelessly dispersed. The conflict took place at Hatfield, in the Southern part of Yorkshire. That Edwine should have moved thus hurriedly forward to meet the invaders on the frontier, rather than taken time to collect the strength of his kingdom in a more central position, was, perhaps, the result of distrust in the native population, who were at least as likely to join the kindred ranks of the invaders, as to aid a sovereign, to whom they were bound by no tie, but the yoke of conquest. At all events, if we are without direct information of their participation in the revolt, we know that they were not slow in availing themselves of its result. The kings of Strathclyde, the most important of the tributary States, of whom we hear nothing since the time of Ethelfrith, again appear on the page of history, having seized on this opportunity of asserting their independence. Of the British kingdoms which subsisted in Northumberland prior to the Saxon invasion, Birneich and Deur (Bernicia and Deira) were, as we have seen, overwhelmed by the followers of Ida, and of Ælla. Reged, to the West of Birneich, fell, after a vigorous resistance, under the repeated assaults of the Saxon chieftains, whose reigns intervened between those of Ida and Ethelfrith. Elmet again was colonised by Edwine, but to the West of these limits, Saxon occupation does not appear to have extended. Of the petty rulers, however, of the tributary provinces, no notices have been transmitted to us, except as regards the kings of Strathclyde, or, as they are designated by our earliest informants, of Alclyde, the latter being the name of their capital, on a rocky eminence, adjacent to the modern town of Dumbarton, whilst the former significantly describes the position of their territory in the great Strath or valley of the Clyde. Amongst the British kings, who warred against Hussa, king of Bernicia, the predecessor of Ethelfrith, besides Urien, of Reged, and Guallane, Nennius mentions Morcant and Riderch-hen, names we cannot fail to identify with Morken, and his successor, Ryderic, whom we meet with in Joceline's Life of Kentigern, as kings of Strathclyde, or, as he chooses to designate it, "the kingdom of

the Cambri." For our meagre knowledge of their successors, we are indebted almost exclusively to the brief notices of the Irish annalists.

On the death of Edwine, the antient divisions of Bernicia and Deira were again held for a short period as separate kingdoms, the former by Eanfrid, the son of Ethelfrith, the latter by Osric, the son of Ælfric, the brother of Ælla, and uncle of Edwine. It was not, however, to be expected that either state, weakened as each was by the late disaster, could successfully resist a power which had overthrown the sovereign who wielded the resources of both. Accordingly, we find Osric slain, with all his forces, in an attack upon the British king, and Eanfrid compelled to appeal to the mercy of the conqueror, and by him barbarously murdered. For the space of a year we have the unusual spectacle of a British monarch reigning over a great Saxon state, "not," says Beda, "like a victorious king, but like a rapacious tyrant, ravaging and destroying." This state of affairs was put an end to by Oswald, the brother of the murdered Eanfrid, who engaged and defeated the usurper in the neighbourhood of Hexham. Of Oswald we are told, "he brought under his dominion all the nations and provinces of Britain, which are divided into four languages, the Britons, the Picts, the Scots, and the English." This is, however, somewhat inconsistent with another statement of the same venerable historian, in which he claims for Oswald only the same extent of dominion which had been attained by Edwine, and ascribes to his brother Osric the subjection, and that only partially, of the Picts and Scots. It is not to be concealed, indeed, that Beda somewhat unduly magnifies the prowess and temporal grandeur of the patrons of his own church, whilst the heretic Britons meet with even less favour at his hands than his Pagan countrymen. However great the power of Oswald, he was defeated and slain by Penda, king of Mercia, who appeared as an auxiliary only in the former battle, which terminated in the death of Edwine. The reign of Osric extended from the year 642 to 684, during which period, whatever might be his success against the Picts and Scots, we have no record of any attempt to bring the British population of his own dominions under his more immediate control. This work seems to have been reserved for his son and successor, Ecgfrith, to whose reign may be ascribed, with tolerable certainty, the complete subjugation of the Britons of Lancashire, Cumberland, and Galloway, the entire remnant of the native population within his limits, with the single exception of Strathclyde. We have not, indeed, any account of the abolition of the

tributary domestic government either in Cumberland or Lancashire, but we have authentic records of the share of the spoil which Ecgfrith rendered to the Church. In Cumberland, he gave to Saint Cuthbert, Carlisle with the country for fifteen miles roundabout; in Lancashire he gave him Cartmel, "with all its Britons." Had these districts been in the immediate possession of the preceding Christian kings of Northumberland, it is not probable that until this reign the ecclesiastical historian would have been utterly silent as to any religious foundation, or donation to the church, between the Solway and the Mersey. Even now we have no evidence that the Northumbrian kings resided at all amongst their western subjects, as they did, sometimes at one place, sometimes at another, at different seasons of the year, amongst the Anglo-Saxon population of the east. Even in Beda's time, half a century later, amongst the numerous villas maintained for the migratory residence of the royal household, not one occurs beyond the chain of hills which separated the eastern district of the Northumbrian kingdom from the west. The reason is obvious, that even then no attempt had been made to colonise the latter. Of Galloway we only know that it was incorporated with the province of Bernicia in Beda's time; and when we look to the disorganized and abject state of Northumberland, as described by himself, for forty-six years previous, we can hardly ascribe its subjugation to a later period than the reign of Ecgfrith. After his disastrous death "the hopes and strength of the English crown began to waver and retrograde; for the Picts recovered their land, which had been held by the Angles, and the Scots that were in Britain, and some, also, of the Britons themselves, recovered their liberty, which they still retain after a period of forty-six years." These Britons who recovered their liberty were, undoubtedly, the people of Strathclyde. If Galloway had, like Strathclyde, maintained a domestic, though dependent, government at the critical period of Ecgfrith's death, we can hardly doubt that, like her northern neighbour, she would then have achieved her independence. That she did not do so, but continued a member of the province of Bernicia, we have already seen.

Of the civil government of Galloway during the century which succeeded the death of Beda, we have no particulars, but for more than half that period we may infer that no change took place, as during that time the series of Anglo-Saxon bishops was uninterrupted. The last of these was Baedulph, who was appointed A.D. 790, but how long he held the see is altogether uncertain; neither do any of our historians mention the cause of the

abolition of the episcopate. Little doubt, however, exists on this head, for we learn indirectly, from several sources, that not long after this time the government of the province must have passed out of the hands of the kings of Northumberland, and that this revolution was brought about by the invasion of a people, from whose residence, within its bounds, the district acquired the name of "Terra Pictorum," the land of the Picts. Chalmers, and other Scotch antiquarians, maintain that these intruders were not the well known Picts of North Britain, but a tribe who long resided in Ireland, under the designation of "Cruithne," of which they inform us "Pict" is a translation. Notwithstanding this respectable authority, it may be fairly questioned, whether an invasion by the Picts of the north is not at least as probable as by the "Cruithne" from the west; and whether it is not more likely that the term "Picts" was applied by the neighbouring people to a race who had long borne it, and who still existed under it at no remote distance, than that this familiar term was transferred as a translation of the barbarous name of new settlers from another island. In support of this view we may also refer to the events, in connection with which we first hear of the Picts of Galloway. In the year 837, we read in an antient document, printed by Innes, under the title of "Nomina Regum," that Alpin, king of the Scots, was slain by the Picts in a locality which is clearly recognised within this district. Again, we learn that his death was avenged by his son Kenneth, and "hence," says our authority, "the government of the Picts was superseded by the government of the Scots." Now the government which was superseded was not that of the Cruithne, but of the antient Picts, and we may surely infer that the people whose atrocity led to this retribution were Picts also, and not Cruithne. From the accession of Kenneth to the joint rule of the Picts and Scots, the term "Picts" ceased to be applied to any portion of the united people. So complete, indeed, is the disuse of the name, that it was long contended that the people themselves were exterminated by the avenging Scots. In Galloway, however, the name still subsisted. In 875 the Danes ravaged the territory of the Picts and Strathclyde Britons. Joceline, in his life of Kentigern, uses "Terra Pictorum," in speaking of Galloway; and Reginald of Coldingham, in describing the wanderings of the monks of Lindisfarne with the body of their patron, St. Cuthbert, places beyond dispute, the locality of the land of the Picts, by noticing Kirkcudbright as within its limits. As late as the middle of the twelfth century, Richard of Hexham,

a contemporary writer, speaking of the natives of Galloway, who formed part of the miscellaneous forces of the Scotch king at the battle of the Standard, describes them as Picts.

Of the government of these people, till they passed under the rule first of the kings of Cumberland, and afterwards of those of Scotland, we know nothing, but for ages after they were united to the latter monarchy, they preserved traces of laws and customs peculiar to themselves.

Two of the kings of Strathclyde, Morken and Ryderic, have already been noticed, as the opponents of the Saxon conquerors of Bernicia, in the sixth century. It may not be out of place to collect here such further particulars of this little State as are to be met with in the pages of the English and Irish annalists. The latter speak of them as kings of Alclyde, and sometimes as kings of the Britons, under which latter denomination it is not always easy to determine whether these princes, or the kindred rulers of North Wales, are the parties indicated. In the Saxon Chronicle, the term "Strathclyde Welch" is used. This is rendered "Cumbri" by Ethelward, whose annals are little more than an abridged translation of the chronicle. Joceline again, who wrote in the twelfth century, extending this nomenclature from the people to their country, talks of the latter as "Regnum Cambrense," "Regnum Cambrinum," and "Cambria," thus causing succeeding writers to confound the little district of Strathclyde with the larger territory of Cumbria, which as yet had no existence under any general government, or common name. Even Chalmers, although he emphatically cautions his readers against the mistakes of his predecessors in this very particular, does not avoid error himself, in respect to the limits either of the Regnum Cambrense of Joceline, or of the kingdom of Cumbria. In the former he includes Galloway, from the latter he excludes Cumberland, South of the Solway, and thus asserts the identity of the two. The limits of Cumbria will form a necessary subject of enquiry, by and by. As regards the Regnum Cambrense, or kingdom of Strathclyde, we have already seen that it enjoyed an independent existence, whilst Galloway was comprised within the Saxon province of Bernicia. Even Joceline himself, whose inaccurate nomenclature has led others into error, does not claim Galloway as within the Regnum Cambrense. On the contrary, when he speaks of the missionary labours of Kentigern, in "the land of the Picts" (the name by which Galloway was known in his time), he expressly tells us that it was

beyond the precincts of the diocese of the Saint, which was co-extensive with the Cambrian kingdom. Assigning to Galloway the utmost extent which has ever been claimed for it, there still remain for the kingdom of Strathclyde the modern counties of Lanark, Ayr, and Renfrew, on the South of the Clyde, and, probably, Dumbartonshire on the North. This last, including the city of Alclyde itself, was not originally British territory, for we are expressly told by Beda, that in former times, before the settlement of the Scots in Britain, the Frith of Clyde separated the Britons from the Picts. In his own time, however, he informs us, the Britons possessed the impregnable city of Alcluith, on its Northern shore. "The Scots, also, arriving on the North side of this gulf, had formed a settlement there." The capital of the Strathclyde Britons was thus placed between the territories of the Scots and Picts, the former of whom occupied Argyleshire, and the lower district of the Clyde, whilst the latter still retained the dominion of the Eastern side of the island, from the Forth Northwards. The position of Alclyde beyond the deep-water barrier of the Frith, on which it stands, was doubtless of the utmost importance to the Britons, in their struggles for independence with the Saxon kings of Northumberland. When their rich lands in Clydesdale were overrun, they could still maintain the contest with their baffled pursuers, in this rocky fastness, although, even here, the Saxons, in alliance with the Picts, on one occasion, succeeded in capturing their stronghold.

Chalmers places at the head of his series of Strathclydian kings, *Nau* or *Cau*, * the reputed father of Gildas, but if Nau is entitled to any place at all in authentic history, it is on the authority of a Life of Gildas, in which he is represented as a Scottish, and not a British prince. Huail, his son, is said to have been driven from the throne by the celebrated king Arthur, and though we must receive this statement with caution, as based on very meagre testimony, it is by no means inconsistent with the account given by Beda, of the successive occupations of the district North of the Clyde, by the Picts and the Scots, and the subsequent acquisition of Alclyde by the Britons. Nau, in this case, must have been contemporary with the earliest Scottish settlers on record, as Arthur appears to have commenced

* See the Life of Gildas, prefixed to Mr. Stevenson's edition of that writer; also, the Life of Gildas, by Caradoc, of Lancarvan. Both are manifestly apocryphal as regards Gildas, but it does not necessarily follow that the historical personages who are introduced are unreal.

his reign towards the close of the fifth century, and Fergus, the son of Erc, the founder of the Scottish dynasty, at the beginning of the sixth. However this may be, tradition has connected Arthur with the South and South-west of Scotland, and the North of England, and the local nomenclature affords many traces of his fame, especially in the case of this very citadel of Alclyde, or Dumbarton, which is styled "Castrum Arthuri," in a record of the reign of David II.*

The battle of Badon, the crowning exploit of Arthur's career, is placed by the most trustworthy authorities, in A.D. 516, and it is probable that he did not survive it many years. If he were really king of Strathclyde, it is not likely that he was the immediate predecesssor of Morken, as the latter was still living in the reign of Hussa, king of Bernicia, at least sixty years later. The names of the intervening reguli, however, no where occur, nor is their loss of much importance. Ryderic, his successor, died in 601, in the eighth year of the reign of Ethelfrith, king of Northumberland. Two years later occurred the signal defeat of Aidan, king of the Scots, at Dawston, and it is probable that the subjection of the Britons was the immediate consequence. At all events, during this and the succeeding reign of Edwine, we hear nothing of the independent existence of this people, nor do we even know the names of their chieftains. The same state of dependent inaction prevailed during the reign of Oswald, but in the very year of his disastrous death, A. D. 642, we find the Britons carrying on important military operations on their own account, in which Owen their king distinguished himself, by slaying on the battle-field of Strathcarmaic, Donal Break, king of the Scots. During the long reign of Oswi, in Northumberland, we read of one king of Strathclyde, Guiret, but the record is only of his death, A.D. 657, not of any exploits which he performed.

On the death of Ecgfrith, A.D. 670, the Britons, as we have seen, recovered their liberty, and henceforward we have a tolerably complete list

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* See Chalmers' Caledonia, Book II. Chapter ii., in which he gives a variety of local names derived from king Arthur. To this list many additions might be made. Chalmers also gives a list of the kings of Strathclyde, from the Ulster Annals, Symeon of Durham, &c. See also Ritson's "Annals of the Caledonians, Picts and Scots," in which he has inserted whatever he has been able to collect, relative to the various tribes who have at any time dwelt within the limits of modern Scotland, as well from the classic authors, as the mediæval historians, and the Lives of the Scottish and British Saints.

of the kings of Strathclyde, with notices of their conflicts with the Scots, Picts, Northumbrians, and Danes, during the two succeeding centuries.

In the year 869 Alclyde was utterly destroyed by the Danes; and henceforward the Northern Britons are no longer distinguished in the Ulster Annals as of Alclyde, but of Strathclyde, from which we may infer that the citadel was never rebuilt, if, indeed, they continued to retain any territory north of the Clyde. In 872 we are briefly told by the same authority, that Artga, king of the Strathclyde Britons, was slain at the instance of Constantine II. of Scotland. The motives which prompted this sanguinary act may be gathered from a notice in the antient Pictish Chronicle, published by Innes, from which we learn, that Ku, who had married the sister of Constantine, ascended the vacant throne. After the death of Constantine and his brother Aodh, who reigned after him a single year, Eocha, the son of Ku and nephew of Constantine, succeeded to the crown of Scotland, as well as of Strathclyde, A D. 882. Eocha was a minor under the tutelage of Gregory, or Grig, to whom he was indebted for his accession to a throne rendered vacant by the death of Aodh in battle. Gregory was so distinguished by his prowess and the success of his arms, that he is represented by most of the Scottish historians, not as the regent, but the king of that country, and his exploits are magnified beyond those of any of his predecessors. Whatever amount of exaggeration we may attribute to the accounts of his conquests in England and in Ireland, there is every reason to believe that the history given by Fordun, of his peaceful acquisition of certain British provinces, is entitled to credit. "The indigenous inhabitants," we are told, "of certain provinces voluntarily submitted themselves to Gregory, with their lands and possessions, thinking it preferable to be subject to the Scots, who, although enemies, were Christians, than to infidel pagans." These "Indigenæ" must have been the people of Galloway, and of the district around Carlisle; for the Strathclyde Britons, the only other people within the sphere of his influence, to whom the designation could be applied, were already under his authority as the guardian of Eocha. The transaction is what might have been expected from the relative position of the parties, for nothing was more natural than that two petty states, too weak to defend themselves from the hateful aggression of the Danes, and deprived of the protection of the Saxon kings of Northumberland, who had themselves succumbed to the common enemy, should turn for aid to the only neighbour who seems sufficiently powerful

to resist the invaders. The vigour of Gregory, however, was inadequate to support his usurped authority, and after holding the reins of government eleven years, he was expelled, together with Eocha, by Donal the son of Constantine, A.D. 893. To Donal, who was slain by the Danes in 904, succeeded Constantine III., the son of Aodh, who was slain by Gregory. Four years before his accession to the throne of Scotland his brother Donal had been "elected" king of the Strathclyde Britons, on the death of another Donal, who was probably the immediate successor of Eocha. During the life of Donal the districts of Carlisle and Galloway were not united to Strathclyde, but remained attached to Scotland; from which, however, they were separated after his decease, and given to his son and successor, Eugenius. To this new kingdom, thus founded by Constantine in favour of his nephew and presumptive heir, by the union of Carlisle and Galloway with Strathclyde, was given the name of Cumbria, derived from Cumbri, the common appellation of its inhabitants. Its extent is precisely defined in a return made by the prior and convent of Carlisle to a writ of Edward I., requiring them, as well as other religious houses, to furnish, from chronicles or other documents in their possession, any information bearing upon the alleged right of supremacy over Scotland vested in the English crown. The return sets forth that "That district was called Cumbria, which is now included in the bishoprics of Carlisle, Glasgow and Whitherne, together with the country lying between the bishopric of Carlisle and the river Duddon;" in other words, the entire tract from the Clyde to the confines of Lancashire. In the "Inquisitio Davidis," which does indeed extend to all parts of Cumbria which remained in David's possession, we are expressly told that "he had not then within his dominion the whole Cumbrian region," the present county of Cumberland, or as it was then called, of Carlisle, having been severed from it soon after the Norman conquest. Although Fordun is the only author who narrates the cession of Carlisle and Galloway to Gregory, and the subsequent grant of these districts by Constantine to Eugenius, whereby they were united to Strathclyde, and the whole merged in a single government, we have abundant evidence of the existence of Cumberland and the intimate union of Constantine and Eugenius at this period. In the year 938 these princes, in conjunction with the Danes and Welsh, attempted to wrest the sovereign power out of the vigorous hands of Athelstane. The combined forces were signally defeated by the Anglo Saxon monarch at Brunanburgh;

Eugenius was slain, and Constantine escaped only by a precipitate retreat.

Edmund having completely wasted Cumberland, placed it at the disposal of Malcolm, king of Scotland, an acknowledgment, it would seem, of the right of the Scottish crown to that territory, and a presumptive proof of the accuracy of Fordun's narrative.

From this period, Cumberland continued in the possession of the royal family of Scotland, sometimes retained by the king himself, at others, held by a member of his family; usually, if we may credit the national historians, by the proximate heir. The only circumstance which is recorded of it for many years, is its total devastation by Ethelred, king of England, A.D. 1000, at which time it is represented by Henry of Huntingdon as the principal rendezvous of the marauding Danes. In 1052, Macbeth held the Scottish throne, whilst Malcolm, the son of his predecessor, Duncan, sat on that of Cumberland. Siward, Earl of Northumberland, was commissioned by Edward the Confessor to invade Scotland, and avenge the "murder" of Duncan. In this he succeeded, defeated and slew Macbeth, and placed the king of Cumberland, or, as some historians assert, his son, on the throne of Scotland. This Malcolm, surnamed Caenmore, held at the time of the conquest, Cumberland and Lothian, in addition to the ancient kingdom of Scotland. During the reign of William the Conqueror, the Earldom of Carlisle, containing the present county of Cumberland, and part of Westmoreland, was severed from Malcolm's possessions, and the existing limits established between England and Scotland. The kingdom of Cumbria was thus reduced to the dimensions indicated in the Inquisitio Davidis, and was held as a principality dependent on the crown of Scotland. Lothian, on the contrary, was held by the successive kings of Scotland, as a feof of the crown of England, and Odericus Vitalis says it was for this province, and neither for Scotland, nor for Cumberland, that the much contested homage was due.

Having thus traced the history of Strathclyde, Galloway, and Carlisle, from the remotest period, respecting which any information is to be found, down to their amalgamation, under the name of Cumbria, and the ultimate division of that territory between England and Scotland, it remains to collect such traces as exist of the condition of the district between the Duddon and the Mersey,

So long as the native chieftains were allowed to exercise a subordinate

authority, the Northumbrian kings had no occasion to interfere with the internal government of the subject provinces. If the tribute was duly rendered they remained unmolested; if it was withheld, payment was enforced by arms; or, in extreme cases, the refractory state (to use a modern phrase) was "annexed," as we have seen in the instance of Elmet. When, however, the domestic government was extinguished, it was necessary to provide a new administrative machinery. Accordingly, at the very period to which, on other grounds, we have assigned the extermination of the native dynasties in Lancashire, Cumberland and Galloway, we find for the first time in the Northumbrian annals, the appointment of a new class of officers, who are variously styled by Beda—"tribuni," "duces," and "præfecti"—whose administration appears to have extended not only to the Britons, but to the subject Picts, and even to the Irish, who were partially subdued by Ecgfrith. After his reign and the contraction of the territory of his successors, the authority of these officers was necessarily confined to the Britons. Henceforward the names of several "duces," or as they are termed in the Saxon Chronicle, "ealdormen" occur, but the only one whom we can distinctly identify as connected with Lancashire is Wada, whom we find in the year 798 stationed in the neighbourhood of Whalley, which, as well as Manchester, is expressly stated in the Saxon Chronicle to be in Northumberland. The grounds on which Dr. Whitaker contends against this direct historical testimony, that the Ribble and not the Mersey was from the first the south-western boundary of Northumberland, are, first, that the district between these rivers formed part of the Mercian diocese of Lichfield, and not the Northumbrian diocese of York; and, second, that the local nomenclature bespeaks the Mercian dialect to the south of the Ribble, whereas the Northumbrian prevails on the north. But surely both these circumstances are consistent with the supposition that the territory between the Ribble and the Mersey was taken from Northumberland by Edward the elder, and annexed to his own dominions, when he directed the occupation of Manchester in 923. It is natural to suppose that he would unite his new acquisition to a bishopric within his own dominions; and the only authority which Dr. Whitaker adduces in support of his assertion, that it was always a portion of the diocese of Lichfield, is a document which he cites under the title of "Status de Blackburnshire," to which he does not attempt to assign an earlier date than the fourteenth century.

As regards the etymological argument, it may be remarked, that the dialectic differences of speech between the Mercians and Northumbrians did not originate in any diversity of race in the first instance, for both were Angles, but were introduced when Northumberland was overrun by the Danes, to whose vocabulary nearly every peculiarity of the Northumberland dialect may be traced. Although it may be true of Northumberland generally that it was parcelled out amongst the Danish invaders as early as the year 876, it is probable that many years would elapse before any actual colonization could be effected in this quarter—the most remote of all from the basis of their operations on the Tyne. In the mean time the occupation by Edward the elder effectually secured it from molestation.

During the long period which intervened between the reigns of Ecgfrith and Edward the elder, there can be no doubt that a considerable Saxon population was introduced; the land probably was enjoyed almost entirely by Saxons, still, perhaps, the great body of the inhabitants were of the old British stock. Had it been otherwise the district would either have been formed into a county of itself, or have been incorporated with some other county. That such was not the case even at the period of the Norman Conquest we know on the unquestionable authority of Doomsday, in which it appears, not as shire-land, but as a detached possession of the crown, under the title of "Terra inter Ripham et Mersham." This invaluable document affords additional confirmation to the views expressed above, first, that this district was originally part of Northumberland; second, that it had, at a later period, been united to the monarchy of England. Of the former proposition we have proof in the prevalence within its limits of the ancient tenure of Drengage, of which we have no instance beyond the bounds of Northumberland: of the latter in the circumstance, that whilst the country to the north of Ribble, itself no part of any county, is appended, in the survey, to Yorkshire, the "Terra inter Ripham et Mersham" is appended to Cheshire, which was always recognized as within the province of Mercia.

Seven years afterwards, we learn from Roger of Wendover, that Edmund, king of England, with the aid of Leoline, king of South Wales, ravaged the whole of Cumberland, and put out the eyes of the two sons of Dunmail, king of that province. Dunmail, himself, seems to have escaped. He was probably the son of Eugenius, or Owen, the preceding king, and the same person who is described as Dunwallon, "the son of Owen," and who died at Rome thirty years afterwards. In the annals of Ulster, indeed, this Dun-

wallon is described as king of Wales, but Caradoc calls him prince of Strathclyde, and his patronymic designation seems to identify him with Dunmail, if, as we assume, the latter was the son of the first king of Cumberland.

The Northern part of Lancashire, which is described in Doomsday as Agemundrenessa (Amounderness) continued, after the abolition of the royal dignity in Northumberland, A. D. 952, under the government of the Earls of that province. One of these, Eadulf, about a century after the above date, is accused by Symeon of Durham, of committing savage atrocities amongst the Britons. These may either have been the British inhabitants of his province, or the neighbouring people of Cumberland. We know that a small district of the latter county, beyond the Duddon, was brought under the dominion of the Northumbrian Earls, and is described in Doomsday as part of Amounderness, in which is included also the Barony of Kendal, which forms a moiety of the present county of Westmorland. The whole district is returned as the property of the Crown, the greater part having been held, in Edward the Confessor's time, by Tosti, Earl of Northumberland. In fact, up to the period of the Conquest, the "Terra inter Ripam et Mersham," and Amounderness, appear to have been two vast seignouries or honors, the one appertinent to the Crown of England, the other to the Earldom of Northumberland, within which existed many manors and estates, held by private individuals, both under free and servile tenures. For a short period after the Conquest, the whole of the Southern seignoury, and a large portion of the Northern, were held by Roger of Poitou, but had reverted to the Crown before the Doomsday era. It is remarkable that the district of Cartmel, although it lies directly between the main body of the county of Lancaster and Furness, which is described as part of Amounderness, is unnoticed in Doomsday. From the period of the grant of this district by king Ecgfrith to Saint Cuthbert, not a trace is to be met with, either of Cartmel or its population of Britons, till the year 1188, when a Priory was founded here, by William Marshall, Earl of Pembroke. Long before that, it is probable that the distinctive features of a Celtic people had disappeared, not only here, but throughout Lancashire. Even in the Doomsday survey, there is little in the names of the proprietors, or in any other particular, to remind us how large an amount of Celtic blood must still have been diffused amongst the natives of that county. We might almost be led, from this consideration, to suppose that a system of extermination must have been pursued towards the Indi-

genæ, had we not found the same state of things to exist in Strathclyde, where the Britons were so long not only the most numerous, but the dominant race; and yet in the course of a few generations, there is little to distinguish the Strathclydians from the Saxon people of the neighbouring counties. Wherever a Celtic people have remained isolated, as the Welsh, the Highlanders of Scotland, and the Irish, they have preserved with wonderful fidelity the characteristics peculiar to their race; but where they have mingled with alien tribes, they have invariably received the impress of those with whom they came in contact, rather than imbued those with any portion of their own national peculiarities. Of the British communities between the Mersey and the Clyde, the only people who preserved anything of their Gælic features, a century after the Conquest, were the Galwegians, and these, though of a cognate race, appear to have been less the descendents of the ancient British population, than of the Pictish immigrants of the eighth century. Their intercourse with other districts was, from the nature of their position, extremely limited, and even after their nominal subjection to Scotland, they remained under the immediate dominion of their own lords.

In Lancashire the case was very different. So long as the "Terra inter Ripham et Mersham" remained a part of Northumberland, the communication with other parts of that state was indeed difficult, separated by a ridge of lofty moors which were not then rendered accessible by the skill and science of engineers; but the circumstances were completely changed when it was annexed to the same state to which the neighbouring county of Chester belonged. No greater obstacle then existed to the utmost freedom of communication, than a river easily passable at all points, in boats, and in its upper portion by fords or bridges. A little later, the same facilities which enabled Saxon enterprise to cross the Mersey into South Lancashire were extended to its further progress across the Ribble into Amounderness, when that district also was severed from the Northumbrian earldom, and placed under the central government of England. If in the Earldom of Carlisle, in which the authority of the central government was neither exercised nor acknowledged, the language and usages of the Britons had yielded to Saxon influence, it is not to be supposed that they would maintain their ground in Lancashire under circumstances so much less favourable to their perpetuation

LIVERPOOL:

MEMORANDA TOUCHING ITS AREA AND POPULATION,

DURING THE FIRST HALF OF THE PRESENT CENTURY.

By J. T. Danson, Esq., F.S.S., Vice-President.

(READ ON THE 8TH NOVEMBER, 1855.)

I.

The sources of information commonly referred to, as to the population of Liverpool, are two. There is the National Census, taken in 1801, and at intervals of about ten years ever since. This serves for the present century. And for the preceding century there is an account compiled for, and presented to, the Commissioners appointed in 1833, to enquire into the state of the Municipal Corporations of the country, and which was printed in the Appendix to their Report, published in 1835.

From the latter source we learn that the population of the town of Liverpool was, at eleven different periods, beginning in 1700, and ending in 1790, as follows:—

	Persons.	Shewing an apparent average annual addition of
In 1700...	... 5,715...	... —
1710...	... 8,168...	... 245
1720...	...11,833...	... 366
1730...	...12,074...	... 124
1742	...18,000...	... 493
1752...	...18,500...	... 50
1766...	...25,787...	... 520
1770...	...35,600...	...2,473
1777...	...34,107...	...(a loss)
1786...	...41,600...	... 832
1790...	..55,732...	...3,533

In 1801, the Census gave for Liverpool a total of 77,653 persons, shewing, for the eleven years, 1790–1801, an average annual increase of 1,992 persons.

It does not appear upon what area, precisely, any of the eleven enumerations prior to 1801 were made. And from the apparent use of round numbers in four out of the eleven statements, we may fairly infer that some of them were based upon mere estimate, and were not the result of, or based

upon, any actual enumeration. The great irregularity of the rate of increase between some of the periods, exceeding what has been recorded as of ascertained occurrence under similar circumstances, also affords ground for suspecting the accuracy of the eleven statements; and as we have no reason for placing more reliance upon any one of the statements than upon any other, any suspicion raised by the irregularity of the results, tells, more or less, against the whole.

Not wholly without explanation, however, is this irregularity. Reference to cotemporary history, and especially to the history of the commerce of the port of Liverpool, reveals something like corresponding changes in the prosperity of the town.

It will be observed that the first remarkable increase of the population took place between 1752 and 1766; and that this was followed by a still greater increase between 1766 and 1770. The first of these dates marks the period at which it would appear that the Slave-trade began to be carried on largely by the merchants of Liverpool. The British share of this trade seems to have been most extensive about the year 1771. After that period it declined; the supply to the West Indies having so far overtaken the demand, as to reduce the selling price, and render the profits of the trade both smaller and less certain than before.

The decline of the Slave-trade had scarcely been ascertained, when the trade with the North American colonies was stopped by the outbreak of the war of 1775–83. Accordingly, we find the population of 1777 less than that of 1770; and at the next period (1786), three years after the trade was opened with the United States, the increase shewn is but small. Soon afterwards several causes combined to augment the trade of Liverpool. In September, 1786, a very liberal Treaty of Commerce was concluded between Great Britain and France; and it continued in force till war broke out between the two countries in February, 1793. And from 1783 to 1793, the shipping of Liverpool, which for some seven years previously had found in privateering the most inviting, if not the most profitable, form of employment, was fully engaged in carrying on a rapidly increasing trade, arising principally from the early but already rapid growth of the cotton manufacture, and stimulated by a degree of freedom in the commerce of Europe, such as had not been known before, and has scarcely been equalled since.

It forms, however, no part of my present purpose to ascertain the popu-

lation of Liverpool prior to the present century, or to deal with prior records, except in so far as these may throw light upon the more recent period. And having now scanned, though somewhat cursorily, such data as we possess of the growth of the population during the eighteenth century, we are enabled to mark a degree of coincidence between the figures relating to the hundred years 1701–1801, and the fifty years 1801–51 which is at least remarkable. If we accept, as nearly correct, the eleven statements already given for the former period, it appears that the population of the town was increased in the first fifty years of the century by about 250 per cent on its amount at the commencement. In the next fifty years, 1751–1801, it would appear to have been nearly the same. And in the third fifty years, 1801–51, it was also very nearly the same. Thus—

Population of 1700, by statement...	5,715
Add for apparent increase in one year	245
Apparent population in 1701...	5960
	3.5
Computed population in 1751	20,860
	3.5
The like in 1801	73,010
	3.5
The like in 1851	255,535

The numbers actually stated above, and by the census of 1851, being—

In 1752 ..... 18,500;——1801 ..... 77,653;——1851 258,236

Should the same proportion hold through the fifty years now current, the population in 1901 will be upwards of 900,000. In other words, that will be about the number of the inhabitants of Liverpool when the children of the present day, destined to live so long, shall have reached their fiftieth year.

II.

The town of Liverpool may be said to appear in the Census for 1851 in two forms. First is given the population of the *parish* of Liverpool; of which I may observe that its limits are coincident not only with those used for the Census enumeration, but also with those of the district established in 1836 for the registration of births, marriages, and deaths.

We have, also, in the previous five Censuses, the population of the same

district in 1801, 1811, 1821, 1831, and 1841. We have, therefore, six actual enumerations upon the same area, as follows:—

	Persons.	Shewing an average annual increase of
In 1801...	... 77,653	
1811...	... 94,376...	...1,672
1821...	...118,972...	...2,459
1831...	...165,175...	...4,620
1841...	...223,003	...5,782
1851...	...258,236...	...3,523

Here it would seem that the rate of increase was materially reduced between 1841 and 1851, as compared with the previous decennial periods —a result we are by no means prepared for, as indicating a corresponding abatement in the actual growth of the population of the town. But it is accounted for when we remember that we are not now dealing with the population of the town (properly so called), but with that of the parish; and that the town has, undoubtedly, of late years, outgrown the limits of the parish. This enumeration, therefore, does not afford a complete view of the town in 1851; and, perhaps, not even in 1841. And as we have no reason for assuming that the limits of the parish were coincident with the limits of the town proper at any of the previous Censuses, we are compelled to reject these figures as unfitted, in their present form, to furnish a just conception of the population of the town at any period in the half century.

But Liverpool appears in the Census of 1851 in another form. The Registrar General has taken the population for 1851, and also for 1841, within the limits of the parliamentary and municipal borough. No enumeration within these limits was, or could have been, made in 1801, 1811, 1821, or 1831, as they were not fixed till the passing of the Reform Act, and the Municipal Corporation Act, between 1831 and 1841. But the Registrar General has supplied the omission by an *estimate* of the population existing in 1801, 1811, 1821, snd 1831, upon "nearly the corresponding area."

The results are:—

	Persons.	Showing an average annual increase of
For 1801...	... 82,295	
1811..	...104,104...	...2,180
1821...	...138,354...	...3,425
1831...	...201,751...	...6,339
1841...	...286,487...	...8,473
1851...	...375,955...	...8,846

Here again we find the rate of increase less between 1841 and 1851 (in proportion to the previously existing population) than it was between 1831 and 1841.

And again we are reminded that the limits thus taken through the entire period of fifty years were not those of the town properly so called, and cannot even be supposed to have coincided with the real boundary of the town at any time within that period—seeing that extensive tracts of land which cannot be deemed to have formed part of the town are known to have existed, even in 1851, within the limits of the parliamentary and municipal borough.

The whole extent of the parochial area has been ascertained to be 2,220 acres. This is reduced by the necessary deductions for *water* (fixed by the estimate of Colonel Dawson, of the Tithe Commission, at the request of the Registrar General) to 1,560 acres.

The precise extent of the municipal and parliamentary limits referred to by the Register General, I have not been able to ascertain; but they would seem to be about 4,400 acres, thus :—

	Acres.
The Parish of Liverpool, (exclusive of water,) ...	1,560
The Township of Everton	700
The Township of Kirkdale	702
The Township of Toxteth Park, (part,) estimated,	800
The Township of West Derby, (part,) estimated,	680
	4,442

Both these areas are, however, liable to an objection which I cannot but deem insuperable. Both are uniform through the whole period. Both, therefore, are based on the assumption that the population of the town was spread over the same area during the entire fifty years—an assumption notoriously at variance with the facts. Both, therefore, must be rejected.

III.

Having rejected the areas assigned to the town at successive periods, by the only authorities to which we can look for information touching the population, we have now to seek some other, more consistent with the principle on which the rejection has been made. That principle is one too

simple and obvious for dispute. It is that the area of the town must, in the absence of evidence to the contrary, be deemed to have increased with the population. Whence we are bound, in view of the returns before us, which undoubtedly indicate a constant increase of the population, to assign to the town, at each decennial period, some reasonable increase of area. How this may be done, with the materials before us, and with the nearest apparent approximation to accuracy, is the problem I have to submit to you this evening.

I shall first lay before you the data on which we have to proceed; then describe the method I have adopted to elicit the required information; and, finally, state to you the result.

But first let me define what I mean by a term which occupies a very prominent and important place throughout this paper: let me say what I understand by the word Town. I assume, then, that a Town is an aggregate of the general population of the country which differs from the rest, so far as we are at present concerned with it, only in *its greater density.*

Of the 624 districts into which, for the purpose of the Census enumeration of 1851, the whole of England and Wales was divided, I find that one (East London) was peopled at the rate of 185,751 persons to a square mile, or about 290 to an acre; while another (Bellingham, in Northumberland,) had only 18 to the square mile. These were the extremes; they were in point of density, as more than 1,000 to 1; and the other 622 districts exhibit nearly every degree of density between these two. The question which now presents itself is this: What degree of density shall be held to constitute "Town," as distinguished from "Country"? The average density of the Parish of Liverpool, in 1851, was about 165 to the acre. But of the seven sub-districts into which the Parish is divided, some had a higher, and some a lower, density than this. And it is probable, that had the parts of the Town lying beyond the limits of the Parish been separately enumerated, they would have been found to possess a density lower than the average of the Parish.

This brings us to a further consideration. We know, from observation, that beyond the limits of all our towns, however these limits may be laid down, there is a surrounding district, more or less extensive, which, though it be not included in the town, can scarcely, with propriety, be deemed "country." To these districts we are accustomed to apply the term

" suburbs." Further, it does not admit of dispute, that the suburbs belong much more to the town around which they are gathered, or rather from which they emanate, than to the country, with which, by a too narrow definition of the word " town," they would be confounded.

The results of any adequate consideration of this topic could not be expressed here without carrying us beyond the scope of the present paper. The growth of towns in England and elsewhere, its methods, its causes, and its consequences, has not yet received the care it deserves from those who are disposed to seek in the best known and least disputable phenomena of human society the surest and safest indications of a wise general polity. Familiarity, without attention, deadens the observing faculties; and the dwellers in towns are yet less observant in this direction than at first sight would seem likely. It is not disputed that a square yard of stone wall, covered in the course of half a century with patches of moss and lichen, affords a study not unworthy of an adequate exercise of the human faculties. Nor can it be disputed that a map of any part of Europe of the same size, accurately shaded to represent the growth of the town population during a similar period, affords a spectacle of similar, but higher interest—and one even more worthy of scientific investigation. To be successful in the study of either we must approach it in the same spirit. The particular facts will be of a very different order; yet discreetly to use them, in tracing the effects we see to their causes, demands precisely the same methods of reasoning.

But the work is not yet begun. Hence I am compelled either to abandon my present purpose, or to proceed by a method more or less empirical. The former would give no result. The latter may give one as good as can at present be attained. And, its basis being obvious, it cannot have any deceptive effect.

After well considering, then, all the circumstances which seem to me to bear upon the meaning of the word " town," I have assumed that to justify its application there should be, upon the whole area in view, an average of not less than 100 persons to the acre.

For the suburbs of a town I assume a similar average of ten persons to the acre.

The method of applying this definition I shall have occasion to refer to presently.

The data now before me consist of a return of the area and population of every "enumeration district" near enough to the parish of Liverpool to have contributed, with any degree of probability, to the formation of the town or its suburbs at each of the six enumerations of 1801, 1811, 1821, 1831, 1841, and 1851.

Those I have selected consist of twenty-one townships besides the Parish of Liverpool—thirteen on the Lancashire and eight on the Cheshire side of the Mersey. For it will be observed that my definition rests simply upon the density of the aggregation; and, on considering the nature of the division effected by the River Mersey, I have seen no reason for excluding from view, as part of the town, whatever must be deemed so in fact, whatever it may be in name.

These twenty-one townships are shown in the following table:—

DISTRICT.	Total Area, exclusive of Water.	Computed distribution of area in 1851.		
		Town.	Suburb.	Country.
	Acres.	Acres.	Acres.	Acres.
In Lancashire:—				
Parish of Liverpool.....	1560	1560	—	—
Kirkdale Township	702	48	500	157
Everton ,, ...	700	210	492	—
West Derby ,, ...	6123	250	500	5373
Wavertree ,, ...	1796	—	311	1485
Toxteth Park ,, ...	2333	556	500	1270
Bootle ,, ...	1171	—	352	819
Waterloo ,, ...	1886	—	152	1734
Garston ,, ...	1628	—	194	1434
Great Crosby ,, ...	2117	—	134	1983
Litherland ,, ...	1179	—	166	1013
Much Woolton Township ...	930	—	315	615
Little Woolton ,, ...	1200	—	41	1159
Huyton ,, ...	1630	—	48	1582
Totals in Lancashire...	24955	2624	3705	18624
In Cheshire:—				
Birkenhead Township.....	900	188	500	212
Tranmere ,, ...	1174	10	500	664
Oxton ,, ...	802	—	160	642
Claughton ,, ...	436	—	49	387
Liscard ,, ...	896	—	365	531
Poulton-Cum-Seacombe	669	—	271	398
Higher Bebbington.....	899	—	102	797
Lower Bebbington	1052	—	96	956
Totals in Cheshire	6828	198	2043	4587
Totals in both Counties.	31783	2822	5748	23211

This places nearly one-fourteenth part of the *Town* on the Cheshire side of the Mersey in 1851. At the same date a little more than one-third of the *Suburbs* appear on the same side. But it is also obvious that a large proportion of these Cheshire suburbs were, (prior to 1851,) more likely to form new additions to the Town area than to continue extending in the suburban form. And this tendency has since received a new impetus in the renewal of the Birkenhead Dock Works.

The mode of computation by which the figures in the last three columns of this table were elicited from the data afforded by the Census of 1851 is easily explained.

The twenty-one townships selected adjoin Liverpool, and were each taken as presenting a higher density of population than seemed consistent with the assumption that it was entirely "country." Here, however, it was necessary to fix upon some degree of density, excess of which should bring the examined townships within the list. And, in approaching this part of my task, I observed that though there might possibly have been an equality of density in the town population of England during the fifty years in view, no such equality could be consistently looked for in the rural districts, especially those in the immediate neighbourhood of towns. Hence the necessity for a maximum *country* density as a basis, and one that should increase at every decennial period. After well considering the claims of simplicity and of probable accuracy, I adopted the following method of fixing this test. I took, first, the aggregate population (as given by the Registrar General, upon a basis which I cannot deem very accurate, but which may be sufficiently so for the present purpose) of the fifty-two towns enumerated in the two counties of Lancashire and Cheshire in 1851 The fifty-two towns contained a total population of 1,572,316 persons. Deducting this from the total population of the two counties at the same time (2,490,817) we have a remainder of 918,501, for the rural population. This, taken in connection with the space occupied, may be deemed to afford an approximate notion of the density of the country population at that period; and one which is probably below, rather than above, the actual density in the parts nearest the towns. Then, as to the rate of increase of the country density, I find that had Lancashire and Cheshire been peopled in 1851 only at the rate common to all England and Wales (including the towns) they would have contained rather fewer persons altogether, than is thus attributed to their country parts alone. In other words, there is, in

the average density of England and Wales, a close analogy to that of the country parts of Lancashire and Cheshire (as stated for 1851 by the Registrar General). And, in the absence of any better guide to the density of the rural districts of Lancashire at previous Censuses, I assume that something not very far removed from the same analogy has existed throughout the fifty years in view. Acting on this assumption, I take for the maximum average density of the country immediately surrounding the suburbs of Liverpool—

In 1801	... ...	25	persons per square mile
1811	... ...	30	,, ,,
1821	... ...	35	,, ,,
1831	... ...	40	,, ,,
1841	... ...	45	,, ,,
1851	... ...	50	,, ,,

It may be objected that, while admitting an increasing density in the surrounding country I assume an uniform rate for the suburbs. This I do, because I see reason for believing that the tendency to increased density in the suburbs, for the time being, has been constantly counteracted by an increasing facility of communication. And as the leading causes of the formation of suburbs are intimately and obviously allied with the facility of transit thence, to and from the central parts of the town, it may even be doubted whether the average density of population in the suburbs of our larger towns has not, during the last half century, rather diminished than increased.

With the densities thus assumed to be due, respectively, to town, suburb, and country, each district, as presented by each census, has been examined in succession, and the excess apparent beyond the average due to a country district put aside as indicating the existence of a corresponding extent of suburb, or town, or both. The extent of each is at once determined by the amount of the excess. Continuing this process through the successive decennial statements, the assumed growth of the suburban portion of each district is stayed whenever it is found to have covered an area of 500 acres: that being deemed, from observation, about the point at which the formation of the denser aggregate of a town would commence on the interior borders of the suburb. The suburb, then, being maintained at this extent, so long as the extent of the district permits it, any further surplus is carried to the formation of an addition to the central *town*, at the average rate of 100 persons to an acre. And so on, till every

district in the list has been examined, and computed, for each of the six decennial enumerations.

The net results may be stated, shortly, as follows :—

YEAR.	AREA COVERED BY THE TOWN AND SUBURBS.		
	In Lancashire.	In Cheshire.	Total.
	Acres.	Acres.	Acres.
1801...	1,990	—	1,990
1811...	2,590	12	2,602
1821...	3,172	72	3,244
1831...	3,954	454	4,408
1841...	4,944	1,327	6,271
1851...	6,329	2,241	8,570

POPULATION OF THE TOWN AND SUBURBS.

YEAR.	TOWN.			SUBURBS.			TOTAL.
	Lancashire.	Cheshire.	Total.	Lancashire.	Cheshire.	Total.	
1801...	68900	—	68900	13010	—	13010	81910
1811...	87600	—	87600	17140	120	17260	104860
1821...	121800	—	121800	19540	720	20260	142060
1831...	176800	—	176800	21860	4540	26400	203200
1841...	203700	3100	206800	29070	12960	42030	248830
1851...	262400	19800	282200	37050	20430	57480	339680

The six decennial statements afford us five equal intervals, or periods of increase. And by marking the numbers added in succession, in each of these intervals, we obtain a somewhat clearer view than that afforded by the figures as they stand in the above table, of the varying rates of progress.

For instance, for the whole *Town* (omitting the suburbs) we find that the numbers added were :—

In the First decennial interval ... ... 18,700 persons.
Second ,, ... 34,200 ,,
Third ,, ... 55,000 ,,
Fourth ,, ... 30,000 ,,
Fifth ,, ... 75,400 ,,

Here there is a remarkable defalcation in the fourth period, or between 1831 and 1841.

Dealing similarly with the *Suburbs*, we find a different result; and one which accounts, in part at least, for the irregularity observed in the progression of the *Town*. The numbers added being:—

In the	First period	4,250
	Second „	3,000
	Third „	6,140
	Fourth „	15,630
	Fifth „	15,450

Here we have a considerable falling off in the second period, and a small one in the fifth. But we have a very large increase in the fourth: indicating the extensive formation of new suburbs between 1831 and 1841, the interval during which the growth of the Town proper appears to have been proceeding at a slower rate than usual.

Increased facility of communication across the Mersey has evidently changed the previous direction of the town's growth; and it would appear that the centre of the town, which down to 1831 tended to move *from* the river, has since been fixed; and is unlikely to move further in that direction.

The materials are too imperfect to warrant much further elaboration. The superficial form in which I have presented them is undoubtedly open to serious objections, in a scientific point of view. It may render somewhat more obvious, and somewhat more available, to those who do not look into the original records, the data we possess; but no method of treatment can cure the defects of these data, or educe from them the means of closely examining the actual growth of the town.

ON THE SAXON ELEMENT IN THE DICTION OF ENGLISH POETRY.

By David Buxton, Esq.,

PRINCIPAL OF THE LIVERPOOL SCHOOL FOR THE DEAF AND DUMB.

(READ 1ST NOVEMBER, 1855.)

The subject announced in the title of this paper, appears to me to present itself in two aspects, which are of equal interest. To the lover of literature, it is interesting, in its connexion with poetry; and to the philologist in its relation to language. One whose daily occupation it is to give a knowledge of the English language to those whose physical deprivation causes them to be utterly ignorant of all language, is naturally led to make himself acquainted, to some extent, with the sources and the materials of our mother tongue; and when, in the precious intervals of a busy life, he has been able to steal aside from the track of necessary duty, to snatch however transiently the joy which literature affords, it has only deepened the conviction which many will share with him, that there are no richer delights to be found anywhere, than in the ever "fresh fields and pastures new"* of English poetry.

I lay claim to no other qualifications for dealing with the present subject than such as these pursuits have afforded.

Now I believe that there passes current in the world a large quantity of respectable letter-press, under the name of poetry, which has not the smallest right to that honourable designation. We certainly have verse of every style, and upon every subject: as moralizing, it is most unexceptionable; as satire, it is most pungent; in its prosody, it is correct to a hair's breadth; its rhymes may be such as Pope himself might envy; and yet it is a complete misnomer to call it poetry at all.

If the theory which I shall enunciate is correct, it is a mistake to suppose that any work is necessarily a Poem, because it is written in rhyme, or in

* Milton. *Lycidas.*

blank verse; or that poetry has any necessary connexion with the trick of putting a nominative a dozen lines from the verb it governs, and filling up the intervening chasm with high-sounding words, woven into dislocated verse; or that there is any poetry in words, as such, apart from the idea which they appropriately embody, or the objects which they fitly describe.

The faults here indicated are perhaps not so current now as they were formerly. We have some lingering specimens of these vicious styles amongst us still, but they were carried to their greatest lengths by the writers of the Didactic School, who, aiming at a compromise between poetry and prose, succeeded in producing something which was neither the one nor the other. But, let us not deceive ourselves on this point. Though we may have fair ground for congratulation that this school of writers has almost become extinct amongst us, we must not, therefore, conclude that we are faultless. If it is the glory of some periods to have a title to greater eminence, and higher renown, than can be claimed for other times, it is not the less certain, that every age has its own characteristic failings. One observant critic will tell us, and with truth, that almost every grade, both of topic and of treatment, ranging between the familiar and the abstruse, is followed by our living writers; and another will add—what can scarcely be denied—that not only is this so, but these extremes are run out to their furthest limits, until, in the excess of our passion for common things, we find men singing in the slang of outlaws, and others soaring so very far into the regions of transcendentalism, that minds of ordinary stamp can only "toil after them in vain," and leave them at last, in sheer despair of following, to chant their unintelligible strain in their own way, to their own unalloyed, because unshared, gratification. So much for the affectations of fashion, and the mannerisms of the day. But poetry is independent of all these. Though sometimes "cribbed, cabined, and confined," and held down in ignoble slavery to the caprices of the time, yet there is that within her which speaks thrillingly and lives immortally—and she is beautiful even in her chains. How much the more, then, when fitly habited and adorned.

> .....a native grace
> Sits fair proportioned on her polished limbs,
> Veiled in a simple robe, their best attire
> Beyond the pomp of dress: for loveliness
> Needs not the foreign aid of ornament,
> But is, when unadorned, adorned the most. *

* Thomson's Seasons.

Yet it is not in words that the magic of poetry lies. It is in the ideas which are associated with those words. Poetry resides not in the outward form or dress of any man's conception, but in the idea so conceived. John Clare, the peasant-poet of Northamptonshire, has borne testimony to this truth in one simple and beautiful couplet—

> I found the poems in the fields;
> I only wrote them down.

If, therefore, the original idea, as it arises in the mind, is not, in itself, poetical, no powers of language, or supposed charms of diction, can ever make it so. As it is birth, and not dress or manner, which makes an Englishman, so it is the native thought, which is, or is not, poetical. No assumed dress or form can give to any mental conception a character which it does not naturally possess. Poetry is an essential, not an accidental, property. But it is absolutely requisite to the due development of poetic thought, and for investing it with full expressiveness and beauty, that it should be clothed in befitting language. The thought which would be striking for its impressiveness, or admirable for its beauty, may be made ineffective or ludicrous, either by the puerility or the pompous extravagance of its diction. What poetry seeks from language, is adequate and graceful expression. This being given, the feeling which burns in the heart of the poet will soon be responded to in the hearts of other men, and the kindling light of genius be felt and reflected in minds happily susceptible of those influences which make "the poet's pen" more potent than the wand of the magician.

The proposition which I shall endeavour to prove on this occasion is, that the proper dress of English poetry is that portion of the English tongue which is commonly distinguished and known as the Anglo-Saxon. If I were engaged in a strictly etymological enquiry, it would be my duty to analyse the composite character of our language more rigidly, and to define its lines of separation more closely, than is at present necessary. For though our vocabulary bears obvious marks of having gained its present flexibility and fulness by what it has drawn from *many* different sources, it is sufficiently accurate for our present purpose to take its main constituents to be two, and to assign the Norman conquest as the dividing point between them. The language which at that time began to be engrafted upon the original Anglo-Saxon, was adopted from the Latin, either immediately, and in tolerable purity, or through the Normans and French, with

the modifications of form which they had introduced. These two main tributaries of our language, I shall speak of as the Anglo-Saxon and the Classical, and shall endeavour to show that the older, or Anglo-Saxon element, is emphatically that of poetry, as best adapted to the work of addressing the fancy, and appealing to the feelings, while the other is found to be the most suitable in all which concerns the peculiar province of the intellect. And the reason is this:—like the feelings themselves, the language of feeling never alters. "One touch of nature makes the whole world kin," and while the restless intellect of man is making new discoveries, achieving new conquests, and perpetuating them in the advances of science, and the progress of civilization, the human heart remains still and ever the same. Through every stage of social progress—in the midst of the constant changes and chances of this mortal life, that source of sympathy and fount of feeling remains unchanged; and the language which is the exponent of those feelings partakes of the same unchanging character. But that language which describes events and circumstances—which records the discoveries of science, and conveys the lessons of philosophy, must be expected to change its form, and to enlarge its scope, as new events transpire, and circumstances alter, and science achieves new triumphs, and philosophy extends her researches, and gathers from each new field of observation new motives to duty, and fresh supplies of deep and solid wisdom. Poetry, again, has to do with details; science with generalisations. For the former, simple words, expressive of simple ideas, are necessary, and such are most commonly of Anglo-Saxon derivation. For the latter, such words are needed as are capable of combination—as the Latin and Greek—by which complicated ideas may be united in a single word, at once significant and concise. For these two distinct purposes, the two main branches of our language seem signally fitted, and I hold very strongly the opinion, upon grounds to be shewn presently, that any heedless or ignorant admixture of the two, without reference to this principle, tends to lower the purity, and weaken the force of language, and to lessen the peculiar charms of its respective constituents.

No stronger proofs could be adduced than those which are to be found in the Sacred Writings. But these I forbear to press into a discussion upon a purely literary topic, though I cannot pass without naming Psalms CIV. and CXXXIX., Eccles. XII., Isaiah XL.; the history of Joseph, the appeal of Ruth, and that night vision in the book of Job which Burke refers to, as a

passage of "amazing sublimity."* In the Lord's Prayer, too—as we learned it from beloved lips in infancy—there are not six words, which are not immediately and directly derivable from Anglo-Saxon. The Prayer Book of the Church of England bears also similar testimony. Those parts of it which have been added, on occasion, and to meet particular contingencies, may almost in every case be distinguished from its original contents, by the more extensive prevalence in them of a foreign classical diction. Theology requires such a diction, but Devotion does not. What, I would ask, has that noblest of all hymns—the Te Deum—or that most devout of all supplications—the Litany—lost of original significance and force in that Anglo-Saxon version with which we are so familiar?

But we will turn from these examples to the illustrious roll of English poets; and by the light of their undimmed and still unwaning lustre, examine the theory which I have to vindicate. Wordsworth remarks that "the affecting parts of Chaucer are almost always expressed in language pure and universally intelligible, even to this day."† The same cannot be said of his descriptions of persons and customs; and the reason why the language proper to feelings has remained unaltered, while that which is appropriate to other matters has changed, has already been given. Sir Philip Sidney said of the old ballad of Chevy Chase, "that he never heard it, that he found not his heart moved by it more than with a trumpet."‡

Campbell tells us, however,§ that "the prevailing fault of English diction, in the fifteenth century, is redundant ornament, and an affectation of Anglicising Latin words." Nor can we wonder at this, when we remember of how many co-operating causes it was the effect. The Crusades, and the extended commerce to which they led, had opened the civilisation of the East, to the semi-barbarism of the West. During the long period in which the Turks threatened Constantinople, there was a constant influx of the learned of that metropolis into Italy, where the love of ancient learning revived under their auspices; and when at last, A. D. 1453, the imperial capital of the East fell into the hands of the Mahomedan conquerors, the treasures of literature, which had so long been accumulated there, were dispersed throughout Christendom, and the invention of printing soon

* On the Sublime and Beautiful, Part II., Section iv.
† Note to Preface, *Lyrical Ballads.*
‡ *Defence of Poetry*, quoted in Percy's Reliques, vol. i.
§ Essay on English Poetry, p. 93.

placed them within the reach of the studious in every country. Nine new colleges had been founded at Oxford, and an equal number at Cambridge, in the course of the thirteenth and fourteenth centuries; the same period also witnessing the establishment of the foreign universities of Padua, Naples, Toulouse, Montpelier, Salamanca, Orleans, and some others of less note. In the two succeeding centuries, the movement not only continued, but was urged on by the circumstances just mentioned. And it was then, too, that our Grammar Schools sprang into existence. That of St. Paul's, London, was founded by Dean Colet, the friend of Erasmus, in 1510; that of Manchester, by a Lancashire worthy, Hugh Oldham, bishop of Exeter, in the same year; * and during the reigns of Henry VIII., Edward VI., and Elizabeth, 1509–1603, a very large proportion of those now in existence were established, some by the sovereign, others by private individuals. Among the former are the Westminster, Shrewsbury and Birmingham Schools, and Christ's Hospital; and among the latter, besides the foundations of Colet and Bishop Oldham, just mentioned, the noble schools of Harrow and Rugby, and that of Merchant Taylors' Company, in London, as well as others in the smaller towns throughout the kingdom, almost every one of which has, at some time or other, sent forth its pupil into the world, to play therein an honourable part, and to become thereafter one of the nation's illustrious ones. Bishops and priests, soldiers and statesmen, philosophers and poets; men whose names are watchwords, breathing

* The Boteler Grammar School, at Warrington, was one of the earliest of these Foundations, having been established in 1526. See the paper by J. F. Marsh, Esq., in the present volume. The total number of Grammar Schools in England and Wales, appears by the reports of the Charity Commissioners to be 705, and their total annual income £167,761. The following table taken from the "*Digest of Schools and Charities for Education*," which forms part of the Commissioners' Report, shews the number of Grammar Schools founded in successive reigns.—It is extracted from the *Educational Expositor* for November, 1855:—

Henry II 1 (1154–1189)	Elizabeth 112 (1558–1603)	Anne 29 (1702–1714)
Richard II 2 (1377–1399)	James I 70 (1603–1625)	George I 39 (1714–1727)
Henry VI 3 (1422–1461)	Charles I 54 (1625–1649)	George II 26 (1727–1760)
Henry VII 7 (1485–1509)	Commonwealth 33 (1649–1660)	George III 22 (1760–1820)
Henry VIII 36 (1509–1547)	Charles II 65 (1660–1685)	George IV 1 (1820–1830)
Edward VI.. .. .. 48 (1547–1553)	James II 15 (1685–1689)	Unknown 97
Mary 22 (1553–1558)	William and Mary .. 23 (1689–1702)	Total 705

courage into the breast of the hero, and inspiration into the spirit of the sage; these were once the hard-working pupils of England's Grammar Schools. Not to wander from our present subject, just glance at the list of poets. From Westminster School have come Ben Jonson and Dryden, Cowley and Cowper, Churchill and Southey. Milton was educated at St. Paul's; his witty contemporary, the author of *Hudibras*, at Worcester;* Shakspeare at Stratford; Sir Philip Sidney at Shrewsbury; Addison, Dr. Johnson, and Garrick, at Lichfield; Coleridge and Charles Lamb at Christ's Hospital: and Wordsworth received a portion of his early training at the little village Grammar School of Hawkshead, in this county. And now, to connect this apparent digression with our present subject.

The object of these schools was to give a classical education: to make that general which Henry VIII. had already made fashionable, by his own attainments, and by having his children thoroughly instructed in the ancient languages. Sir John Cheke, Regius Professor of Greek at Cambridge, had been Preceptor to King Edward, and Roger Ascham to Queen Elizabeth. If, therefore, the prevailing fault of the fifteenth century was, as Campbell states, the affectation of Anglicising Latin words, such a fault was not likely to be amended in the following century. That, on the contrary, it greatly increased, we know to be historically true. A well-known testimony is borne to this fact by the very competent authority of Sir Walter Scott, who, in his novel of the *Monastery*, avowedly satirizes, in the character of Sir Piercy Shafton, the current language of fashionable life in the time of Queen Elizabeth. Yet the reign of that sovereign stands pre-eminently illustrious in the annals of English poetry; and the two greatest names in the splendid array of Elizabethan poets are those of men who may be said to have absolutely turned their backs upon the fountains of classic lore, and drawn only from the "well of English undefiled." That Shakspeare brought with him from the Grammar School at Stratford "little Latin and less Greek,"† is no unfortunate circumstance for the English language, and for English poetry; and that Spenser, after once contemplating so great an innovation as the abolition of rhymes, and the introduction of hexameters into English verse, should finally not only adopt Anglo-Saxon as the vehicle of his thoughts, but should avowedly imitate the diction of times preceding his own, shews that he, too, turned away from the new wine which he had

* *Comus* was first acted, and *Hudibras* was written, at Ludlow Castle.
† Ben Jonson.

more than tasted, "saying the old is better." And what was thus effected for the diction of poetry, by the genius and example of these two great men, was yet more remarkably and successfully accomplished for the language itself by our noble English Bible. That which was solid and fixed in the character of our vernacular was thus taken from the lips of the people, and imperishably recorded; and much besides, which was in a state of transition, and might soon have become obsolete, was arrested, and thus saved from being swept away before the invasion of a new and pedantic phraseology. It was as if,—to borrow an illustration from that beautiful art, of recent discovery, which transfers and embodies into picture not only the bold, immutable outlines of the landscape, but seizes too its lighter graces, and catches the very shadows as they fly,—thus it was that Tyndale and Coverdale first of all, and the translators of our present version after them, not only employed and recorded in permanent shape that part of our language which was in daily use, but those more fleeting characteristics which are analogous to the passing shadows in the view, or the momentary play and expression of the features,—all these were seized in their passage, and written in light, as with a ray from heaven, and the result was that glorious picture, our peerless English Bible. If any man would see what poetry is, and what it is not, and would judge of the capability of our Anglo-Saxon tongue, let him turn from a passage in Dr. Johnson, Young, Akenside, or Thomson, or in the works of some who might be named among our living authors, to a chapter in Isaiah, or to one of the Psalms. There he will see how the sublimest truths which can address man's intellect, and the most touching incidents which can affect his heart, are set forth in the plainest and simplest language. They seek no embellishment from words; the stirring grandeur, or the moving pathos of the subject, appears all the more vividly for the pure simplicity of its vesture.

But now to turn to those illustrations which these observations have too long interrupted. We will first quote Spenser—that "prince of poets in his tyme"—and it should be sufficient to refer to his description of the "gentle Una with her milk white lamb," in the first Canto of his *Faery Queene*, and again to that passage in Canto III., where it is said—

> Her *angel's face*
> As the great eye of heaven shyned bright,
> And made a sunshine in the shady place,
> Did never *mortal* eye behold such heavenly *grace*.

Out of nearly thirty words in this passage, there are just four of foreign

derivation; and not to dwell too long upon a single work, or a single author, I will just quote two of the stanzas in the same writer's exquisite *Hymn of Heavenly Love.*

Yet, O most blessed spirit! pure lampe of light,
Eternall spring of grace and wisedom trew,
Vouchsafe to shed into my barren spright
Some little drop of thy celestiall dew,
That may my rymes with sweet infuse imbrew,
And give me words equall unto my thought,
To tell the marveiles by thy mercie wrought.

O blessed Well of Love! O Floure of Grace!
O glorious Morning Starre! O Lampe of Light!
Most lively image of thy Father's face.
Eternal King of Glorie, Lord of Might,
Meeke Lambe of God, before all worlds behight,
How can we thee requite for all this good?
Or what can prize that thy most precious blood?

A close examination of these passages will shew how little the author owes to a classic diction; how capable he proved the older English tongue to be, as an exponent of devotional and poetic thought. Turn now to Shakspeare, and see if it was necessary to the expression of his vivid thoughts, that he should escape from the poverty of his native language, and become a dependant upon the wealth of other tongues. Our examples, however, must be short and few. First glance at the night scene in the *Merchant of Venice*:—

How sweet the moonlight sleeps upon this bank—
Here will we sit, and let the sounds of music
Creep in our ears: soft stillness and the night
Become the touches of sweet harmony.

Again in *Henry VI.*:—

The gaudy, blabbing, and remorseful day
Is crept into the bosom of the sea.

And the description of the River, in the *Two Gentlemen of Verona*:—

The current, that with gentle murmur glides,
Thou knowest, being stopped, impatiently doth rage;
But when his fair course is not hindered
He makes sweet music with the enamel'd stones,
Giving a gentle kiss to every sedge
He overtaketh in his pilgrimage;
And so by many a winding nook he strays,
With willing sport to the wild ocean.

Besides these, which seem sufficient for the purpose, I had marked for quotation the apostrophe to Mercy, in the *Merchant of Venice*, Wolsey's Farewell to Power and Dignity, the passage in *Macbeth*, beginning—

"To-morrow, and to-morrow, and to-morrow,"

with some others. But time prevents my quoting them at length, or making comments as I proceed. A close observation of the passages read will shew that the diction is that which I have called Anglo-Saxon, to the almost entire exclusion of those words which are of classical derivation.

Milton, though so eminent a classic, and though *Paradise Lost* was formed upon the best ancient models, and his declared purpose was to make an innovation upon English practice, by setting an example,—"the first," he says, "in English,—of ancient liberty recovered to Heroick Poem, from the troublesome and modern bondage of Rhyming,"* has yet clothed some of his finest thoughts in that native language, which was the theme of one of his earliest poems. The description of Evening in the Fourth Book of Paradise Lost—

"Now came still evening on," &c.

and that exquisite speech of Eve's which follows it—

"With thee conversing, I forget all time," &c.

are strongly illustrative of the point we are arguing. So also is the opening speech in *Samson Agonistes*, on his blindness; in contrast to which might well be placed the opening of Book III., in Paradise Lost, beginning, "Hail, holy light," which, with the exception of a few occasional lines, seems to be at once the least poetical and the least intelligible passage in the poem; and that simply from its faulty diction. The Song on May Morning, *Comus*, and the smaller poems, would furnish us with corroborative examples in abundance. Milton was the contemporary of the metaphysical poets; and early in his career seems to have been ambitious of a place amongst them. That despicable school was the product of the extension of classical learning which followed the Reformation, and of the access thereby given to the metaphysical disquisitions of the schoolmen of the middle ages. It would be hard to find, anywhere, more of the common-place and the nonsensical in the garb of verse, than in works of this class; yet some of those writers had a relish for true poetry, and have left behind them some evidences of their powers "not utterly unworthy to endure." Here is a specimen from Francis Quarles, in simple native English :—

Can he be *fair*, that withers at a blast?
Or he be *strong*, that airy breath can cast?
Can he be *wise*, that knows not how to live?
Or he be *rich*, that nothing hath to give?
Can he be *young*, that's feeble, weak and wan?
So *fair*, *strong*, *wise*, so *rich*, so *young* is Man.

* Preface on "The Verse."

So fair is Man, that Death (a parting blast)
Blasts his fair flower, and makes him *Earth* at last;
So strong is Man, that with a gasping breath,
He totters and bequeaths his strength to Death;
So wise is Man, that if with Death he strive,
His wisdom cannot teach him how to live;
So rich is Man, that (all his debts being paid)
His wealth's the winding sheet wherein he's laid;
So young is Man, that (broke with care and sorrow)
He's old enough to-day, to die to-morrow;
Why bragg'st thou then, thou worm of five feet long,
Th' art neither fair, nor strong, nor wise, nor rich, nor young.

The seventeenth century produced a noble array of philosophers—but few poets. In the next generation, the attempt was made to unite the pursuits of both, and that School of Philosophical Poetry sprang up, of which Pope was the founder, and the *Essay on Man* the chief result. This influence continued to operate, with slight modifications, until nearly the commencement of the present century. Wordsworth then set himself to conquer it, but for the time he was foiled. To him, however, and to his friends, Coleridge, Southey, and Scott, do we owe, in a great measure, the increased use which the simple and expressive language of our Anglo-Saxon forefathers has gained in current speech and writing. Take the very first poem in the works of the Poet-Sage of Rydal:—

My heart leaps up when I behold
A rainbow in the sky;
So was it when my life began;
So is it now I am a man;
So be it when I shall grow old,
Or let me die!
The Child is father of the Man,
And I could wish my days to be
Bound each to each by natural piety.

The two last words are derived from the Latin, but there is not another in the whole poem which is not Anglo-Saxon.

Then there is the affecting little story, "We are Seven," the Sonnet on "Milton," and that composed on Westminster Bridge:—

Earth has not anything to show more fair:
Dull would he be of soul who could pass by
A sight so touching in its majesty:
The city now doth like a garment wear
The beauty of the morning: silent, bare—
Ships, towers, domes, theatres, and temples lie
Open unto the fields, and to the sky,
All bright and glittering in the smokeless air.
Never did sun more beautifully steep
In his first splendour, valley, rock, or hill;
Ne'er saw I, never felt, a calm so deep!
The river glideth at his own sweet will;
Dear God! the very houses seem asleep;
And all that mighty heart is lying still.

It will be observed here that most of the natural objects have vernacular names, while those which are artificial have classical ones. I shall only add one more extract from Wordsworth—the description of the *White Doe of Rylstone*:—

White she is as lily of June,
And beauteous as the silver moon,
When out of sight the clouds are driven,
And she is left alone in heaven;
Or like a ship some gentle day,
In sunshine sailing far away;
A glittering ship that hath the plain
Of ocean for her own domain.

A similar passage from Dryden, from the opening of the *Hind and the Panther*, I will here cite, though out of chronological order. Dryden was the lineal predecessor of Pope: like him, he was the poet of artificial life rather than of nature, and his testimony is therefore the more valuable:—

A milk-white Hind, immortal and unchang'd,
Fed on the lawns, and in the forest rang'd;
Without unspotted, innocent within,
She feared no danger, for she knew no sin.
Yet had she oft been chas'd with horns and hounds,
And Scythian shafts; and many winged wounds
Aimed at her heart; was often forc'd to fly,
And doomed to death, though fated not to die.

Though there are several words of Latin derivation in this quotation, they bear a very small proportion to the whole, and there is nothing in Dryden which breathes a finer strain of pure and simple poetry. If we had time to examine the works of other writers belonging to the same school—Gray, Collins, Goldsmith, Cowper—we should find ample evidence to the same purpose. But we must return to the contemporaries of Wordsworth. Coleridge somewhere defends himself against the supposition that he was a full believer in the poetical creed of his friend; but along with other benefits which he wrought, he certainly helped, by his example, in a very eminent degree, to purify our poetry from the jargon of the philosophico-poetic school. I will first quote from the *Ancient Mariner*:—

To walk together to the kirk,
And all together pray,
While each to his great Father bends,
Old men, and babes, and loving friends,
And youths and maidens gay!
* * *
He prayeth best, who loveth best,
All things both great and small;
For, the dear God that loveth us,
He made and loveth all.
* * *

He went like one that hath been stunned,
And is of sense forlorn:
A sadder and a wiser man,
He rose the morrow morn.

For all the purposes of this passage, any other tongue than the Saxon might almost as well have never existed; and so in *Christabel*:—

The night is chill; the forest bare;
Is it the wind that moaneth bleak?
There is not wind enough in the air
To move away the ringlet curl
From the lovely lady's cheek;
There is not wind enough to twirl
The one red leaf, the last of its clan,
That dances as often as dance it can,
Hanging so light, and hanging so high,
On the topmost twig that looks up at the sky.

And the exquisite ballad of *Genevieve* gives further testimony of the same kind. But it may be thought that though our primitive language is adequate to the expression of simple ideas, and to the happy description of natural objects, it is wanting in force, and would fail to express strong emotions, or to develope nobler images. There are numerous passages in Coleridge which would prove the contrary; but I prefer to take an example from a very different author, and one who, it might be thought, would rather militate against the theory I am advocating. If any man ever ignored the canons of the critic, and wrote because he had something to say, and must say it, it was Byron. Let him then be witness. With his wild passions boiling within him, all he cared to do was to give utterance to his strong feelings, in language as strong and vivid as themselves. And he succeeded. No man's works reflect more faithfully than his, their writer's true character, or express with greater power, the bitterness, the hatred, the scorn, which flamed up incessantly and inexhaustibly from the volcano of that impetuous heart. And what was the language which came ready to his pen, when he wielded it to defy the world? Why, the simple Saxon phrase of our unconquered forefathers. When, before he closes *Childe Harold*, his voice "breaks forth" to "pile on human heads the mountain of his curse," what says he—and how?—"That curse shall be forgiveness," &c. (See Childe Harold, Canto iv., Stanzas cxxxv., cxxxvi.) So, too, the description of the night before Waterloo, at Brussels; the Apostrophe to the Ocean, in the same poem; the opening lines in the *Corsair;* the Shipwreck, in *Don Juan*— "Then rose from sea to sky the wild farewell;" and, last of all, that wonderful passage in the *Giaour*,

wherein the aspect of "Greece, but living Greece no more," is compared to the appearance of the dead upon the day of dissolution—

> The first dark day of nothingness;
> The last of danger and distress;
> Before Decay's effacing fingers
> Have swept the lines where Beauty lingers.

Time fails to refer to Scott or Southey, to Shelley, or the poets of our own day. I will just, however, allude to one striking fact. The shorter poems, which are the most popular things of the kind in our language, and by which their authors have attained to the widest celebrity and most enduring fame, are those in which the old Saxon diction has been employed. Of this class are Gray's Elegy; Wolfe's Ode on the Burial of Sir John Moore; Campbell's Hohenlinden; Hood's Song of the Shirt; Tennyson's May Queen; together with some of the more popular pieces in Longfellow, and in Moore's Irish Melodies, and those exquisite descriptions in Goldsmith's Deserted Village, which every schoolboy, in every subsequent generation, has known off by heart. Burns, too, wrote in a language which was oral: not a written language at all: a dialect of that Anglo-Saxon tongue which is common to ourselves, and to our fellow-countrymen in the vast colonial dependencies of the empire, as well as to that sister nation across the Atlantic, where, as I have been informed on good authority, next to the Bible, the most popular, and familiar, and best read book in the country, is the poetry of Robert Burns.

Having thus gone through the works of the greatest English poets, from the Elizabethan era downwards, I submit that I have proved my case—that the Saxon element in our language is the most fitting dress of poetic thought,* and that it has been so employed to embody the noblest concep-

* And this, after all, is but the local application of a general principle. Mr. J. T. Danson, one of the Vice-Presidents of the Society, who occupied the Chair when the present paper was read, threw out this, among other valuable suggestions and remarks, and pointed out, that what is here claimed for what I have called the Anglo-Saxon portion of our language, is probably "possessed, in an equal degree, by the most commonly used part of every other language, when used with ability in addressing those to whom it is native." It is evident that the argument in the paper derives great force from this fact; and that the subject acquires new interest when it is seen that a general principle is illustrated by what was intended to have only a local application. I will put the question thus:—1. The primitive oral language of every people, as it embraces the widest range of associations, is the language of that people's poetry. 2. The Anglo-Saxon is the primitive oral language of the English people; and therefore, 3. The Anglo-Saxon is the appropriate diction of English poetry. Nor have I, in that over-zealous advocacy, which some may think they recognise, claimed more for our primitive Saxon tongue than has been claimed for it by others, whose eminence as writers, and weight as literary authorities, will be recognised when I quote Mr. Macauley:—"The style of Bunyan," says that

tions, by those among our countrymen, whom all delight to honour. And the practical conclusion to be drawn from such an enquiry as the present is this—that whoever aims at poetic excellence, must study attentively the primitive language of this country, must learn to estimate its richness, to appreciate its beauty, and strive to make it the vehicle of communicating his thoughts to those whom he would address. It will more completely and clearly convey his own meaning; it will permit a fuller measure of justice to the nature of his conceptions, and obtain for them a readier comprehension and appreciation from the reader. Surely these are advantages not to be slighted. Those who have laboured to possess them, have been rewarded by the veneration of posterity; while those who have affected to despise, or neglected to cultivate, our simple but earnest Saxon phraseology, though they have, in some instances, achieved a "bubble reputation" in their lives, have been contemptuously doomed to the indifference of later times. Such has been their ultimate gain, after having chosen to adopt a gaudy and "inane phraseology," which has passed current under the name of poetic diction. That spell, however, has been broken. Many of our best modern writers, following Wordsworth's illustrious example, have aimed at, and apparently succeeded in, establishing the principle, that such words as the influence of classical studies have now naturalised into our language, may be legitimately employed, if used discreetly and appropriately, always subject to the laws of rhythm, and subordinate to the more copious use of those primitive words which form the great bulk of our vocabulary, and to which we mainly owe it that our noble English tongue is so rich, so flexible, so expressive, and so musical,

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brilliant writer, "is delightful to every reader; and invaluable as a study to every person who wishes to obtain a wide command over the English language. The vocabulary is the vocabulary of the common people. There is not an expression, if we except a few technical terms of Theology, which would puzzle the rudest peasant. We have observed several pages which do not contain a single word of more than two syllables. Yet no writer has said more exactly what he meant to say. For magnificence, for pathos, for vehement exhortation, for subtle disquisition, for every purpose of the poet, the orator, and the divine, this homely dialect, the dialect of plain working men, was perfectly sufficient. There is no book in our literature, on which we would so readily stake the fame of our old unpolluted English language; no book that shews so well how rich that language is in its own proper wealth, and how little it has been improved by all that it has borrowed." (*Essays*, vol. i.) And that which is here said of Bunyan, might be applied with almost equal force to Defoe. Indeed, it would be possible to carry the argument much further than I have done, and to maintain upon very strong grounds, that not only the most popular *poems*, but the most popular *books*, in our language, are those in which the primitive speech of the people has been used by a master hand.

as the authors now quoted have, in their undying works, demonstrated it to be. Any broad impassable line of separation between the two elements in our language which have now been dwelt upon, I fear too tediously, is as impracticable as it would be absurd. To interweave the one with the other; to give to poetic thought its best expression in the fittest words; scouting equally the affectation of a mawkish simplicity, or the assumption of a pompous volubility—this is the most worthy of the poet's honoured name, and of his noble vocation; as it is the most likely to make his calling honoured, and to establish his own fame upon a real and permanent foundation. But simplicity is a different thing from common-place; and doggrel is not poetry. The poet must treat of objects, not as they are (begging pardon of the Pre-Raphaelites), but as they seem to be. And poetic effect depends not exclusively upon the nature of his subject, but also upon a writer's treatment of it—at least to the same extent that artistic effect depends upon the painter. He finds the best point of view; depicts the scene before him with due regard to the finest effect of light and shade, and expressive grouping; and so he produces an admirable picture. Yet over the very same scenes the "ploughman plods his weary way" daily, but is as indifferent to their beauties as if they had no existence, or as if he were the inhabitant of another planet. And as with the artist's, so with the poet's eye. In the "primrose by the river's brim," and in "the meanest flower that blows," he sees something more than the outward shape, and visible colouring. While for these he has a more intense and loving admiration than another, his fancy invests them with new life and loveliness, "finds tongues" in their speechless beauty, surrounds them with touching images or kindling associations of magnificence and grace; and so by the matchless magic of the poet's pen, he wings their tender messages or thrilling appeals to every heart, which has kindred sympathies with his own.

ON THE FOUNDATION AND HISTORY OF BOTELER'S FREE GRAMMAR SCHOOL AT WARRINGTON.

By John Fitchett Marsh, Esq.

(Read 7th February, 1856.)

After one of our meetings, at which mention had incidentally been made of the Grammar School established at Warrington in 1526, I was requested to make it the subject of a paper; and I promised to put into such a form as might be suitable for a page of our transactions some notes which I have from time to time collected, on the names of the various persons whom I have been able to trace as having filled the office of schoolmaster. It afterwards appeared to me that an account of the foundation deed and a sketch of the history of the school might not be without interest, not only with reference to the particular institution, as a subject of local history, peculiarly within the province of this society, but as illustrative of the state of manners and opinion at that remarkable era in our literary and religious history, of which the foundation of grammar schools was a striking characteristic.

A large proportion of these schools owed their foundation to charters from King Edward VI. and Queen Elizabeth, granting to them the endowments of chauntries, suppressed under the statute 1 Edward VI. c. 14, which, after reciting that "a great part of superstitions and errors in Christian religion hath been brought into the minds and estimations of men, by reason of their ignorance of their very true and perfect salvation through the death of Jesus Christ, and by devizing and fantazying vain opinions of purgatory and masses satisfactory, to be done for them which be departed, the which doctrine and vain opinion by nothing more is maintained and upholden than by the abuse of trentals, chauntries, and other provisions made for the continuance of the said blindness and ignorance, and further considering that the alteration, change, and amendment of the same, and converting to good and godly uses, as in *erecting of grammar schools to the education of youth in virtue and godliness*, and the further augmenting the universities, and better provision for the poor and needy, cannot in this present parliament be provided and conveniently done," authorises the

seizure to the king's use of all lands and possessions for the maintenance of chauntry priests, and the payment into the exchequer of rent-charges appropriated to superstitious uses. But the endowment of schools for the cultivation of classical learning had a prior and independent origin. For some years before the altered relations of the Defender of the Faith with the Court of Rome led to the dissolution of the monasteries, the monastic system had been tottering to its fall: and the exposure of its corruption had prepared the public mind for a measure so violent, that even Henry would not have ventured on it, if he had not felt confident that his designs were seconded by the national will. In the meantime, the revival of classical learning on the continent, and the general enfranchisement of the human mind, which accompanied the agitation of the questions raised by the early reformers, awakened many, even among those who had seen no reason to abandon their allegiance to the Romish church, to the necessity for providing those means for the advancement of learning which the monasteries had ceased to afford. Thus about the year 1515, we find Richard Fox, Bishop of Lincoln, whose foundation of Corpus Christi College at Oxford was originally intended for a monastic establishment, diverted from his purpose by the remonstrance of Hugh Oldham, Bishop of Exeter (himself the founder of the Manchester Grammar School in 1510) urging him to provide for the increase of learning rather than "build houses and provide livelihoods for a company of bussing monks, whose end and fall they themselves might live to see." (*Holinshed's Chronicle*, iii. 617, ed. 1808.) In the same spirit colleges and schools were about this time founded in considerable numbers by royal and individual liberality. Of those which are referred to the former source it is perhaps unnecessary to enquire how many are really indebted to royal munificence, and how many owe nothing to the monarchs whose names they bear, beyond the trouble of affixing the sign manual to the warrant for issuing a charter.

Our Warrington Grammar School owes neither lands nor charter to royal favor; but is indebted for its foundation to the pious bounty of Sir Thomas Boteler of Bewsey, one of the heroes of Flodden, whose knightly family, as lords of Warrington from a period very shortly after the conquest, have been more than once mentioned in the transactions of this society. By his will, dated 16th August, 12 Henry VIII. (1520), after reciting that he had "delyvit by indenture tripartede into the custody and kepyng of the righte revende Father in God John Abbotte of Whalley fyve hundrethe markes

in golde savely to be kepte to his use and to be disposede at his pleasure," declares that "it is his full will and mynde that his executors should have the disposicon and orderyng of the said sume of fyve hundrethe markes to purchase and obteyne lands tēnts or rentes to the yerely value of ten pounds above all charges or as myche thereof as should be unprovidett and purchasede by him and therewith to found a fre gram̄ scole in Weryngton to endure for ev̄ and to susteyne and beire the charges of the same and the residue of the saide fyve hundreth markes whiche should remayne aft̄ the said land p,chasede and all costes and charges cōsnyng the said fundacon of the saide gram̄ scole made & hade he willed that his executors should have the disposicon thereof to dispose for his soule and his wyffe's soule and for the maynetnnce of that his p'sente testamente And it was his will that his executors duryng theire sevall lyves and aft̄ theire decease that his heires from tyme to tyme should denoiate name and appoynte an honeste preste groundely lernede in gram̄ to be maist̄ of the said scole whiche should say masse pray and do dyvine s'vice at the poche churche of Weryngton for the soule of him the saide Sir Thomas Dame Margarette his wyffe his auncetors and his heires after theire deceases and that all statuts and ordinnces concernyng the fundacon of the saide scole should be made and stablysshede by him and his said executors."

Sir Thomas set about the good work in his life time; for by a codicil, dated 27th February, 13 Henry VIII. (1522), after reciting that "his trusty srvnts Sr Willm Plutre and Rauf Alyn at his costs and charges to his use & to the p'fomace of his last will had p'chased certen mesis lands and tents in Tyldesley and Weryngton," he willed "that the said feoffees should stand seasyd of all the said mesis lands & tents w^t^ all their apptnnce to thuse of the fundacon of the free gram̄ scole as is compset in his said will and the same mesis lands and tents to be made sure to the same use by thadvise of his executors and their councell lerned."

He died on the 27th April, 1522; and his pious intentions were carried into effect by an indenture dated the 16th April, 1526, to which date I have accordingly referred the foundation of the school. The deed is made between Thomas Boteler, Esquire, son and heir of Sir Thomas Boteler, of the first part, Dame Margret Boteler, late wife of ye s^d^ Sir Thom, Ranulph Pole Clerke, Richd Sneyde Esq., & Willm Plumtre Chapleyn, Executors* of

*A few words on the names of the executors may not be out of place. Dame Margaret, the testator's widow, was the daughter of John Delves, of Doddington, and is

the testament and last will of ye s^{d} Sr Tho. Boteler of the second part, Sir Richard Bolde K^{t} and 15 other knights, esquires, & gentlemen, four of whom had married daughters of the testator, the intended trustees (or feoffees as they were then styled) of the third part, and S^{re}* Richard Taylor, clerk, named deputed & ordained schoolm^{r} of A new Free School made & ordained

said to have subsequently married Richard Butler, of Rawcliffe. Ranulph Pole is described in the attestation to the will as Parson of Hawardyn. Richard Sneyd, was recorder of Chester, and four times chosen member of Parliament for that city. In 19 Henry VIII. he purchased from John Cheney the manor of Wistaston, which has descended to the Sneyds of Bradwell and Keele, in the county of Stafford. (See *Orm. Chesh.* iii. 256.) Sir Thomas Boteler, who by his will confirms a fee or annual rent of twenty shillynge by the yere to his trusty frende Richard Sneyde for his counsel to him given, appears to have selected him with a view to his professional knowledge, as one of the executors, which office he also filled to Thomas, second Earl of Derby, who died 24th May, 13 Henry VIII. (See *Seacombe's House of Stanley*, p. 43.) The name of William Plumtre occurs in various documents of the period. Sir Thomas, by his will, directs certain feoffees, in whom he had already vested the advowson of the parish church of Warrington for that purpose, to "p̄sente to be p̄sone of the said churche when it shall happe to be next void my well-beloved chapleyne Sir William Plumtre preste for the gode love zele and favor that I beire to the said Sir William and to thentente that he shall daily pray for me;" and makes a pecuniary provision for him until he should be promoted to some benefice of the yearly value of £20 or above. Notwithstanding the testator charges his son and heir, Thomas Boteler, upon his blessing, to suffer the said Sir William peaceably to be presented and inducted into the said church, it does not seem that the arrangement was ever carried into effect; for it appears from Randle Holme's notes on Warrington Church, printed in *Baines*, from the Harl. MSS., that Richard Delves, parson of the Church, died 22nd November, 1527, and on the 27th September, 35 Henry VIII. (1544), we find Sir William Plumtre in possession of the church of the dissolved Augustine Priory of Warrington, under a lease from the great monastic grantee, Thomas Holcroft, (see *Beamont's Warrington in* 1465, p. xlvi.,) while in the 34 Henry VIII., as I shall have to notice presently, the rectory of Warrington was held by Edward Keble, and an arrangement made which rendered it, for 200 years, of very little value to his successor.

* The use of "Sir," as a clerical title, even down to the time of Shakespeare, is as familiar to the reader of early poetry as to the legal antiquary, who meets with the title so often in formal documents like the present, that he cannot share the evident surprise of Tyrwhitt, in his Glossary to Chaucer, "that it has crept *even* into Acts of Parliament." The precise import of the title has not, however, been much considered. Sir Walter Scott, speaking of the usage in Scotland at the end of the fourteenth century, observes that "all the priests of the period, who were called from that circumstance the Pope's knights, received the honorable title of *Dominus*, contracted into *Dom* or *Dan*, or translated into *Sir*, the title of reverence due to the secular chivalry." (*Fair Maid of Perth*, ch. xx.) Archdeacon Nares, in his *Glossary*, also speaks of it as a title "applied to priests and curates in general," explaining that *Dominus*, the academical title of a bachelor of arts, was usually rendered by *Sir* in English at the Universities, so that a bachelor, who in the books stood '*Dominus Brown*,' was in conversation called '*Sir Brown*.'" He adds, that this was in use in some colleges even in his memory, but not, as in the instances found in Chaucer and Shakespeare, prefixed to the Christian name. Fuller observes that "such priests as have the addition of *Sir* before their Christian name were men not graduated in the university, being in *orders* but not in *degrees*, whilst others, entitled *masters*, had commenced in the *arts*: and generally founders of chauntries preferred priests not beneficed to those places, as best at leisure constantly to attend the same." (*Church History*, b. vi. p. 352.) [Since the foregoing was written, the subject has been discussed in *Notes and Queries*.]

by those presents at Warrington in ye county of Lanc. of ye fourth part. It commences with a recital that "ye afores^d^ Sr Thomas Boteler k^t^ Right virtuously calling to his good remembrance y^t^ in ye s^d^ county & shire of Lanc. be very few schools of Gram^r^ Whereby mens sons might learn gram^r^ to ye Intent y^t^ they thereby might ye better learn to know Allmighty G^d^ & to serve him according to y^r^ Duties by Virtue wherof they might ye better avoid and eschew all vices & use good man^rs^ thinking also inwardly in his hearte that throw ye Grace & Goodnes of All^ty^ G^d^ many poor child'n & yong men applying themselvs to learn gram^r^ wch is ye originall ground and fountayn out of ye wch doth proceed & spring ye very mean & plain way to come to ye clear und'standing of Good liveing might approach to such knōlege of ye light of grace y^t^ p̄chance they might happen to be ye very clear lanthorn of Good Example in Vertuous living to all ye country thereabouts to ye good encrease and use of vertue and expulsion of all vices fully intended & purposed to have stablished founded and made A free Gram^r^ school in Warringto^n^ afors^d^ if it had pleased All^ty^ G^d^ to have sufferd him to have livd in ye transitorry life few years longer than he did Wherefore & for as much as it pleased All^ty^ G^d^ to take him to his infinite mercy before ye establishm^t^ & Foundat^n^ of ye same Gram^r^ school yet ye s^d^ Sr Thomas Boteler by his last will and testam^t^ declared and willed y^t^ ye s^d^ Gram^r^ School sh^d^ be after his Death founded and made for ever to endure Wherefore as well ye s^d^ Thomas Boteler son and Heir of ye s^d^ Sr Thomas & ye s^d^ executors of ye Testam^t^ of ye s^d^ Sr Thomas as ye s^d^ Sr Richd Bold and other his co-feoffies afores^d^ consid'ng ye Blessed mind and Good Purpose of ye s^d^ Sr Thom. in ye Premises as is before declared and intending ye perfect execution of ye s^d^ laste will of ye s^d^ Sr Thom^s^ and the Accomplishm^t^ of ye same have ordeynd establisht and made & by these Presents done ordeyn establish and make A free Gram^r^ school to be kept and holden for ever in Warrington afores^d^ and also divers convenient ordenances and estatutes concerning ye same as hereafter done ensue."

I will not trouble you with that portion of the deed which relates to the appointment of trustees, the vesting in them of the trust estates, and the provisions for future management, as it is not only comparatively uninteresting, but is accessible in the reports of the Charity Commissioners. It may therefore suffice to say that by the deed under notice, and a deed therein referred to of even date, a house in Warrington, set in a lane there called Baglane, and a croft adjoining, are set apart for the use of the school-

master, to be called the School House of Warrington; and lands in Lancashire and Cheshire, including those specifically mentioned in the codicil, are vested in the feoffees to the use of the schoolmaster. Provisions are also made for the appointment of new trustees, and for granting leases of the lands to the schoolmaster for terms of 60 years determinable with his life; and it is provided that "whensoever ye s^{d} Sir Richd Taylor now made schoolm^{r} by these presents or any other schoolm^{r} there shall happen to decease or to be amoved from ye mastership or rowme of schoolm^{r} of the s^{d} Free School for any cause hereafter declared that then ye s^{d} Dame Margret Ranulph Rich^{d} & Wm Plumtre and ye overliv^{g} of y^{m} shall name and appoint anoth^{r} honest and discreet Priest sufficiently and groundedly learned in gram^{r} & able to teach gram^{r} to be schoolm^{r} of ye s^{d} school for Term of his life & after ye Decease of ye same Dame Margret Ranulph Pole Richd Sneyde and Wm Plumtre that then Thom^{s} Boteler son & heir of ye s^{d} Sr Thom^{s} Boteler & his Heirs of his body begotten And for default of Heirs of his Body then his right Heirs from time to time whensoever ye s^{d} school shall happen to fall void of a schoolm^{r} by Death or oth^{r}wise shall name appoint & put in another honest & Discreet Priest groundedly seen & learnd in gram^{r} & able to teach gram^{r} to be schoolm^{r} of ye s^{d} Free school And if it happen ye s^{d} Thom^{s} Boteler or his Heirs of his Body & for lack of Heirs of his Body his right Heirs within A month next after ye Advoidance of ye s^{d} schoolm^{r} to be neglig^{t} & remiss & do not name appoint & put in another schoolm^{r} when & as often as ye s^{d} Free school shall fall void as is before declar'd that then ye Parson of Warrington afores^{d} for ye time being and his Success^{rs} Parsons of Warrington afores^{d} shall have for that time only ye nomination & putting in of A new schoolm^{r} of ye s^{d} Gram^{r} School as often as ye same Free School shall fall void as is afores^{d} & in case ye s^{d} Parson or any his success^{rs} Parsons of Warrington afores^{d} shall happen to be negligent & remiss & do not name nor put in an able Honest and Discreet Priest as is afores^{d} to be schoolm^{r} of the s^{d} Free School by ye space of anoth^{r} month then next following that then the Warden of ye Colledg of Manchest^{r} & his success^{rs} for ye time being shall name & appoint A schoolm^{r} of ye s^{d} Free School in like form as ye s^{d} Parson should have done & in likewise in ye time of ye Vacation of ye s^{d} Parsonage ye s^{d} Warden and his success^{rs} shall have ye nomination & appointm^{t} of ye s^{d} schoolm^{r} for that time only as often as ye same school shall fall void ye s^{d} Parsonage then being void of a Parson." It is further provided "y^{t} ye s^{d} schoolm^{r} shall have A seal made & known for ye schoolm^{rs}

Seal of Warrington wth ye wch Seal he shall do and seal all writings y^{t} to him shall appertain in any thing concerning ye s^{d} school or any thing thereto belonging & y same Seal to be surely kept and deliv^{r}d from one schoolm^{r} to another as they shall succeed in y^{r} Rowmes and y^{t} all deeds scripts indentures evidences & muniments concerning ye s^{d} lands &c. shall be layd put & deliv^{r}d by ye s^{d} schoolm^{r} by indenture Bipartited into ye s^{d} College of Manchester & there to be surely kept and copies thereof to be made & deliv^{r}d to ye s^{d} schoolm^{r} & to remain wth him & wth any other schoolm^{r} there & if any of ye s^{d} lands or tenem^{ts} hereafter happen to be in variance or suit in ye Law then ye Warden of ye s^{d} Colledge or his success^{r} for ye defence thereof shall deliver to ye s^{d} schoolm^{r} all such deeds as concerneth ye same lands then being in variance only if need so shall require & after the Determination or appeasing of ye same variance then ye same schoolm^{r} within one month next after shall redeliver all ye same evidence into ye s^{d} College again." Unfortunately all these precautions have been insufficient for their object. Either from the multiplicity of variances and suits in the law, or from other causes, the deeds are no longer to be found in the College of Manchester; and my extracts are taken from ancient copies, which have been admitted as evidence in the Courts. The schoolmaster no longer boasts his official seal; and it is to be feared no impression of it will ever gladden the eyes of Warrington antiquaries.

But the portion of the foundation deed, to which I wish particularly to direct your attention, is that containing "the Statutes and Ordinances of ye s^{d} Free School," and which, so far as they are desirable for our purpose, are as follows :—

"First it is ordeynd y^{t} ye said schoolm^{r} shall teach any scholar coming to ye s^{d} school after Wittington's Gram^{r}* & making or after such Form & such

* Fuller notices that "King Henry endeavoured an uniformity of grammar all over his dominions, that so youths, though changing their schoolmasters, might keep their learning. This was performed, and William Lilie's grammar enjoyned universally to be used. A stipend of four pounds a year was allowed the king's printer for printing of it, and it was penall for any publicly to teach any other. Bishop Buckeridge examining a free school in his diocese of Rochester, the scholars were utterly ignorant of Lilie's rules, as used to others, whereat the Bishop exclaimed, 'What! are there puritans also in grammar?'" (*Church History*, b. v. p. 168.) I find no Act of Parliament bearing on the subject, and know not in what form the royal injunction appeared. It was probably after the date of our foundation deed; for though Lilie's "*Brevissima Institutio seu ratio grammatices cognoscendæ*," appeared as early as 1513, his "*Short Introduction of Grammar* GENERALLY TO BE USED" was first printed by Reynold Wolfe, the king's printer, in 1549. This edition is in the Bodleian, but is extremely rare, not being noticed by either Ames, Dibdin, or Lowndes. The 79th canon of 1603 (confirm-

Gramar wch shall be most used to be taught hereafter in Free Gram^{r} schools & ye same to be taught freely & quietly without taking any Reward Stipend or Schole-hire or any other thing by Promise grant or coven^{t} before made any* Feriall day except three Feriall days next before ye Feasts of ye Nativity of our Ld G^{d} Easter and Pentecost and other three Feriall days next after ye said Feasts except ye s^{d} schoolmaster shall happen to have any reasonable let or impediment Provided alwais y^{t} it shall be lawfull to ye schoolm^{r} & any other schoolm^{r} for ye time being to take of any Scholar of ye s^{d} school learning gram^{r} four penys by year y^{t} is to say in ye Quarter next after X^{t}mas A Cock peney & in any of ye three other Quart^{rs} in ye year one Potation† Peny & for ye same Potation Penys y^{t} ye s^{d} schoolm^{r} for ye time

ing the injunctions of Edward VI. and Queen Elizabeth, and the canons of 1571) directs that all schoolmasters "shall teach the grammar set forth by king Henry VIII, and continued in the times of Edward VI. and Queen Elizabeth, of noble memory, and none other." (*Gibs. Cod.* 1145.) It is not very clear which of the numerous grammatical works of Robert Whittinton, printed by Wynkin de Worde and Pynson, from 1513 to 1522, is referred to in our foundation deed as Wittington's grammar; but at this period he must have been at the height of his reputation. He is mentioned by Warton (*History of English Poetry*, ii. 130) as being the last person, (though some later instances are mentioned in Churton's lives of Smith and Sutton,) on whom was conferred the Oxford degree in rhetoric, which included versification and grammar, and which eventually led to the title of Poet Laureate. Anthony Wood says he was "the most famous grammarian of his time, and had his head crowned, or his temples adorned, with laurel; at which time, and the time also when that degree was completed, it was allowed to him by the venerable regents that he might wear a hood lined with silk, but not to be used for the future by any body else." (*Fasti Oxon.* vi. 19.) The judgment of his contemporaries was not ratified by posterity. Roger Ascham speaks with contempt of "such beggarly gatherings as Horman, Whittington, and other like vulgars for making of Latin" (*Schoolmaster*, p. 277, edition 1815); and says that "a child will learn of the better of them that which another day, if he be wise and come to judgment, he must be fain to unlearn again." (Id. p. 196.) Fuller compares Whittinton and Lilly to "a verb *defective* and one *perfect* in all the requisites thereof;" though in another place he quaintly admits that "some since have discovered *blasted leaves* in our Lilly."

* Unless the word *any* is here used in the sense of *every*, as it appears to be elsewhere, the sentence is incomplete, and possibly requires the word *notwithstanding* to be supplied. If the former be the correct reading, the word *ferial* is used in the sense of weekday. It was occasionally so used, as in a charter of 1448 quoted in Cowel's *Interpreter* (s. v. Feria), stipulating for the celebration of mass, "per tres dies feriales in capella ellemosinariæ nostræ, et .per alios tres dies feriales in capella S. Marie, diebus vero dominicis ubicunque voluerit." The ferial litany is subsequently spoken of in this sense. The word, however, generally implied a festival day of some sort, whence our *fairs*, which in early times were usually held on the wake or festival of the saint to whom the church was dedicated. Perhaps the word had a meaning answering to our modern holiday, rather than to the ancient holy-day, being used, in analogy to the Roman *Feriæ*, to denote those days on which either law, custom, or religion sanctioned a cessation from labour; and a subsequent clause in the deed may have been intended to restrain the too frequent practice of making ferial days an excuse for the interruption of school duties, and to confine the indulgence to the more important festivals or holy days of the church.

† Both of these payments were sanctioned by almost universal custom, but are expressly prohibited in the statutes of the Manchester Grammar School, together with

being shall make A Drinking for all ye s^d^ Scholars in any of ye s^d^ three Quart^ns^ in ye year."

"Also y^t^ ye s^d^ schoolm^r^ shall give no licence to any scholar of ye s^d^ school to play in any feriall day if in ye week of ye s^d^ feriall days shall happen to fall one Holy day & if it be A whole week without any Holy day that then ye afores^d^ schoolm^r^ for ye time being shall give Licence to ye s^d^ Scholars to play on ye thursday at afternoon only except it be at ye Request or Desire of A great Worshipf^ll^ man."

"Item it is ordeynd by ye s^d^ Parties y^t^ ye s^d^ schoolm^r^ for ye time being & any other Priest Schoolm^r^ of ye s^d^ School being within Warrington Parish afores^d^ any Sunday and Holy day shall be personally in ye Quire of ye Parish Church of Warrington afores^d^ in his Surplice to help to sing read & say ye Divine Service according to his Learning & coning Except he have a Reasonable Excuse or Impediment."

"Also it is ordeynd y^t^ all ye schollars of ye s^d^ Free School being present thrice in ye week y^t^ is to say Sunday Wednesday & Friday shall go two & two togeth^rs^ in Processions about or within ye s^d^ Church of Warrington Singing ye Feriall Litany in ye Feriall day & on ye Sunday or other Holy days then singing ye Respondes * or such Service as to that Day then shall appertain & according to ye Coning of ye s^d^ Scholars in Song."

"Also if ye s^d^ schoolm^r^ for ye time being or any other schoolm^r^ of ye s^d^ Free-School be proved afore ye Officiall of Chester by four Honest Persons of Warrington y^t^ he is not Dilig^t^ in attending or teaching ye s^d^ Scholars or else be not honest in his living by Incontinency or Viciousnes or else if he be not Discreet in Correction of ye s^d^ scholars that then if ye s^d^ schoolm^r^ do not amend after three monitions to him thereof to be given by him y^t^

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the Victor Penny—these, with a number of similar perquisites, having become in many instances an excuse for extortion. To modern ideas the barbarous custom of cock-throwing at Shrovetide is scarcely less reconcileable with scholastic discipline than the Drinking prescribed by our foundation deed; but may not the latter have had its origin in a quasi religious observance connected with the founder's anniversary, and traceable to the Jewish funeral feasts? Fuller speaks of a general expense out of lands wherewith every chantry was endowed "for an anniversary potation, founded, as it seems, on Job's words, Job iv., as Bellarmine citeth the chapter without verse:—Panem tuum et vinum tuum super sepulturam justi constitue—put thy bread and thy wine upon the sepulture of the just man—but no such words appear in the place alleged, though some such like are found in the fourth of Tobit, ver. 17." (*Church Hist.* b. vi. p. 352.) In the Book of Ecclesiasticus, ch. xxx. v. 18, we read "Delicates poured upon a mouth shut up are as messes of meat set upon a grave."

* "Responds" were short anthems sung after reading three or four verses of a chapter, after which the chapter proceeded. (*Gibs. Cod.* 298.)

namd & appointed ye same schoolm^r^ if he then be on live & if he be dead then by him y^t^ shall have ye nomination & putting in of ye s^d^ Schoolm^r^ that then ye same person to whom ye next nomination shall belong shall amove the same Schoolm^r^ & provide name & put in another sufficient & able Priest to be Schoolm^r^ of ye s^d^ Free-school for Term of his Life as is Afores^d^."

"Also it is further ordeynd y^t^ he ye s^d^ Schoolm^r^ for ye Time being shall appoint every day one of his scholars learning Gram^r^ of ye two highest Forms in ye school one after another as ye s^d^ scholars shall sitte in order to teach all infants y^t^ shall come to ye s^d^ school to learn y^r^ A. B. C. & Primars & so forth till they be entred into ye Learning of Gram^r^."

"It is also ordeynd y^t^ as well ye s^d^ schoolm^r^ as ye s^d^ scholars of ye s^d^ school inhabited w^thin^ ye Franchises of Warrington afores^d^ between Michaelmas & Easter shall be at ye Parish Church of Warrington betwixt six & seven of ye clock in ye morning & there shall say such Prayers as shall be lymyted & written on A table to be hanged in Boteler's Chappell within ye s^d^ Church then imediately after y^t^ they shall go to ye s^d^ School-house & shall depart thence at five of ye clock in ye Afternoon or by four at ye Discretion of ye s^d^ schoolm^r^ & between Easter and Michaelmas ye same m^r^ and scholars shall be at ye s^d^ Church between five & six of ye clock in ye morning & there shall say ye s^d^ prayers & then imediately from thence shall depart & go to ye s^d^ school & every night after they shall depart from ye s^d^ school ye s^d^ M^r^ & Scholars shall resort to ye s^d^ Church and there shall sing an Antiphone of our Lady and say such Prayers as shall be expressed in ye s^d^ Table & then depart home."

"Also it is ordeynd y^t^ if any of the s^d^ schoolm^rs^ for ye time being shall happen to be sick or diseased so y^t^ he shall not be able to teach ye s^d^ scholars that then he shall cause another sufficient & able Priest to supply his Room during his s^d^ sickness & Disease & shall pay to him such wages as they shall agree upon."

"It is also ordeynd y^t^ no scholar shall wear any Dagger Hangar or other Weapon invasive other than his knife to cut his meat with & y^t^ any scholar shall be obedient to ye s^d^ schoolm^r^ for ye time being in all his comdments & Demands lawfull & shall be ready to give his help & Assistance to ye Correction of ev^r^y scholar of ye s^d^ Free School when & as often as ye s^d^ Schoolmaster for ye time being shall comand them."

"Also it is ordeynd y^t^ ev^r^y scholar after he be twelve months in Gram^r^

shall use to speak to another at all times & in every Place latin & no English & y^{t} no scholar shall use Diceing or Carding nor any other unlawfull games upon pain of Correction at ye Discretion of ye s^{d} schoolm^{r}."

"Also it is ordeyned y^{t} if any scholar do disobey ye s^{d} schoolm^{r} in his Reasonable Comandm^{t} or Correction or make any Fray upon him that then ye s^{d} scholar to be amoved from ye s^{d} school for ever Except ye s^{d} schoolm^{r} be contented to keep him still."

"Also it is ordeynd & agreed betwixt ye s^{d} Parties y^{t} one Aniversary shall be kept within ye s^{d} Church of Warrington at ye Costs of every of ye said Schoolm^{r} for ye time being ye seven & twenty day of Aprill ev^{r}y year for ye souls of ye s^{d} Sr Thom^{s} & his Ancestors & his Heirs & for ye soul of Dame Margret Boteler after her Decease in maner & form hereafter ensuing y^{t} is to wit y^{t} ye Parson or ye Curat of ye s^{d} Parish Church wth seven other priests wch shall be eight in number & ten singing Clerks or schol^{rs} in ye evening before ye s^{d} 27th day shall together sing Placebo & Dirige & in ye morning of ye s^{d} 27th day ye s^{d} eight Priests & ten clerks shall say ye Comendations & after y^{t} at y^{r} Pleasure three of ye s^{d} Priests to say masse of The Trentall of St Gregory* wth ye Collect Deus simul spes nostra & iiij of ye other Priests to say mass of ye Aniversary & ye Parson Curate or another Priest to keep mass of Requiem solemnly wth note & ye other Seven Priests & ten Clerks to help to sing in ye same masse & ye Priest y^{t} keepeth ye s^{d} masse of Requiem to have vij pence & every of ye other 7 Priests to have viij^{d} for y^{r} Business & every of ye s^{d} ten clerks to have ij^{d}."

"And furthermore it is ordeynd y^{t} ye Bellman of Warrington wth ye Bell in ye s^{d} xxvj day of Aprill at afternoon shall go throu ye town of Warrington & according to ye custom therof desire ev^{r}y man woman & child to pray for ye Souls of ye s^{d} Sr Thomas & Dame Margret after her Decease & his Heirs & y^{t} done then ye clerk of ye Church of Warrington to cause three long peals to be rungen wth all ye Bells in ye steeple except ye Sanctus Bell & so on ye s^{d} 27 day as according for an Aniversary & ye same Clerk to have for ye Ringing xx^{d} & ye Bellman to have ij^{d}."

* "Placebo" and "Dirige" are parts of the office for the dead in the Sarum Manual. An office for the dead, under the title of "The Dirige," is retained in Henry VIII.'s Primer. Under the title of "The Commendations," the Primer prints the 119th Psalm, describing it as "the A B C of Godly love, the paradise of lernyng, the shoppe of the holy Gost, the schole of truth." "Mass of the Trentall of St. Gregory" is supposed by a high authority on ritual subjects to refer to a special mass in honour of St. Gregory, in the Sarum Missal, on the 30th day after his festival. Sir Thomas Boteler's will directs "four Trentalls of St. Gregory to be said for his soule at London, at Scala Cœli, by four severall priests."

"Also it is furthermore ordeynd yt evry of ye sd schoolmrs wth ye Advice of ye Chantre Priest there shall give & Deal an Alms ye sd 27th day to fourety poor Folkes xiij^{s} iiij^{d} that is to wit evry of them iiij^{d}."

"Also it is ordeynd that there shall be * * * upon ye Herse* to be made upon & over ye grave of ye sd Sr Thomas viij Syrges† during ye singing of ye Dirige and mass aforesd * * *"

"And furthermore every of ye sd schoolmrs & ye other Chantre Priest before ye feast of Pasche yearly next ensuing shall say or cause to be sd yearly as many other masses to fulfill ye sd Trentall yt is to witt 27 Masses wth ye Placebo & Dirige to make and fulfill A whole Trentall * * * And after ye sd Aniversary * * * Quarter of ye year to say five masses of ye five wounds of our Ld for ye soul of ye sd Sr Thomas and Dame Margret after her Decease wth such collects as they shall think convenient."

"Also it is ordeynd & agreed betwixt ye sd Parties yt ye sd Schoolmr for ye time being once in evry year at ye day of ye sd Anniversary shall make A true Account of all such Issues & Profits coming & growing of ye sd Lands Tenemts & Rents as he shall then have recd that year before * * * ye

* The will of Sir Thomas Boteler directs his body "to be buriede, if it please God, in the p̄che church of Werryngton before the ymage of oure Lady in Boteler's Chapell, in the buriele of his ancestors, nere his father;" and he willed "that a stone or convenyente tomb, with scripture graven thereupon, should be laid upon him, by the discretion of his executors." The "herse," or tomb, erected acccordingly, is described among the other monuments noticed by Randle Holme, who says:—"In the sayd chapell, on a faire marble stone, at the west end of the tombe, in brass, is tow figures, a man standing in armore, with Butler's cote on; and on his wiues cote is Delves cote; the 4 Evangelests in brass in the 4 corners, and written about—'Pray for the soules of Tho. Butler, kt., and Dame Margaret, his wife, which had one sonne and 8 daughters, vilzt. Thomas married Cicely, dau. to Peirs Leigh, Margaret to Rich. Bould kt., Ellen to Jo. Bagott, Eliz. to Geo. Booth, Isabell to Randle Brereton, Anne to Geo. Atherton, Cicely to Henry Kighley, Margery to Tho. Southworth, and Dorothy:' Sir Thomas dyed 27 Aprell, 1522." The only traces of the tomb, which have survived the various alterations in the chapel, are some fragments of brasses, preserved in the Warrington Museum and Library, and shown in our page of illustrations, one of the coats being that of Boteler, and the other Boteler impaling Delves. The third figure is probably the symbol of St. Matthew, being one of "the 4 evangelists in brass in the 4 corners" noticed by Randle Holme. The popular notion that the beautiful alabaster tomb, which adorns the Boteler chapel, is that of the founder of the Grammar School, though confirmed by the statements of Pennant and Baines, is disproved not only by the armour and costumes, but by historical evidence; the researches of Mr. Beamont, printed in the transactions of the Chester Architectural, Archæological, and Historic Society, having shown, from a manuscript of Sampson Erdswick in the Harleian collection, describing the arms formerly sculptured on the monument, that it was erected to the memory of Sir John Boteler, the father of Sir Thomas. The blanks in this and several subsequent clauses of the foundation deed are found in the earliest copies, and represent dark colored interlineations, which were undecypherable when the copies were made.

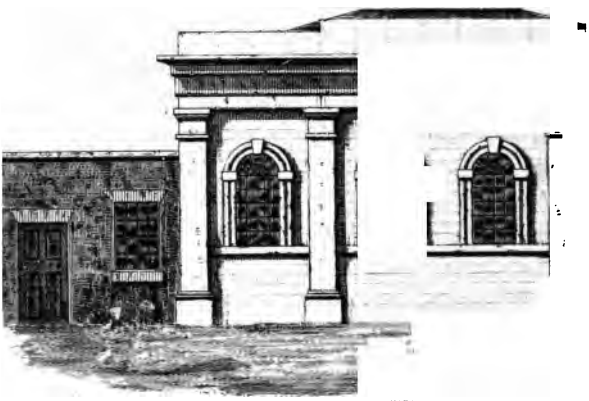
† Serges were the great wax candles burnt before the altar.

Parson or Curate of Warrington & before ye other Chantre Priest singing in Boteler's Chappell afores^d & if ye schoolm^r upon ye s^d Account made shall be found to have rec^d more money than ye sume of tene Pounds * for his Stipend for y^t year & ye costs of ye Aniv^rsary as is before expressd & named that then all ye overplus therof & ye same more money over ye s^d ten pounds & ye costs of ye s^d Aniversary * * * shall be put into A Coffer having three locks upon it & ye same money to be kept to beire ye costs & charges of ye Renuing of ye s^d Feoffment & writing of ye Deeds Schedules & Indentures concerning ye same school & for ye Defence of ye Title of ye Premisses & for ye Ornam^ts of ye s^d Chappel if need shall so require."

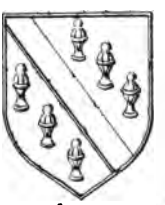
There is no trace of any interference with Sir Thomas Boteler's Foundation under the statute 14 Edw. VI., for the suppression of Chauntries and Trentalls. Probably the appropriation, which (looking at the words of the preamble as to the purposes to which the endowments were intended to be applied) would have been the result of any proceedings thereunder, was effected by the simpler process of neglecting the superstitious observances enjoined by the Foundation Deed. Perhaps the patrons claimed a share of the booty. At all events, we find that by the end of the sixteenth century they had contrived, to a considerable extent, to defeat the benevolent designs of Sir Thomas Boteler. His great-grandson, Edward Butler, died about the year 1586, the last male descendant of his family, having previously sold the Bewsey estates and the manor and advowson of Warrington, which by means of various assurances became vested in Thomas Ireland of Bewsey, whose family, in the 17th century, becoming extinct in the male line, was united by marriage with that of the Irelands of the Hutt and Hale, the ancestors of Mr. Ireland Blackburne. On the death of Edward Butler, the representation of his family devolved upon

* A stipend of £10, after making every allowance for the change in the value of money, seems a slender provision for "an honest and discreet priest groundedly seen and learned in grammar, and able to teach grammar;" but it is not to be attributed to any want of liberality in the views of the founder, for it is worthy of observation that precisely the same stipend was provided in some of the most celebrated foundations in the kingdom, namely that of William of Wykeham, at Winchester, Henry VI., at Eton, William of Wainflete, at Oxford (in connection with Magdalen College), and Hugh Oldham, at Manchester. It must therefore be regarded as an evidence of the low pecuniary value at which the age estimated the services of the learned, of which there is additional proof in the present deed, which provides a fee of 8d. for each of the priests "for their business" at the anniversary, and for each of the singing clerks 2d., being precisely the same remuneration to be given to the bellman for proclaiming the anniversary, while the clerk is to have 20d. for ringing the bells.

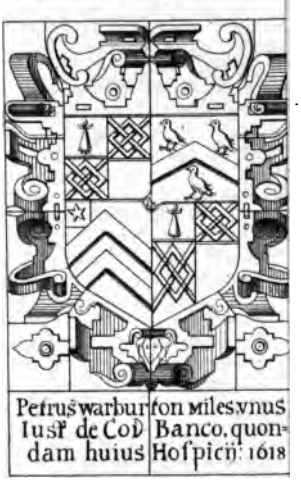
Boteler's Free Grammar Schoo



New School Erected in 18



Brasses from the Founder



Arms of Sir Peter Warburton, from a Wind

his two sisters and co-heiresses, Elizabeth, the wife of Sir Peter Warburton, one of the Justices of the Common Pleas, and Margaret, the wife of John Mainwaring. The latter had, under various pretexts, possessed himself of nearly all the School lands, partly under a grant from Queen Elizabeth, as concealed lands, partly under a lease from Sir Thomas Gerard, the last surviving feoffee, and partly, it would seem, by collusion with the Master. In the year 1602, Sir Peter Warburton, then Sergeant at Law, took upon himself to vindicate the Charity, and filed a Bill in the Duchy Court to compel the appointment of new trustees. The suit abated by the deaths of Lady Warburton and Sir Thomas Gerard; but fresh proceedings were instituted, and eventually the Court ordered "that Thomas Tildisley, Esquire, of councill with the said complainant, and Thomas Ireland, Esquire, of councill with the said defendant, and Sir John Broograve, Knight, Attorney General of this Court, umpier, should mediate some end betwixt the said parties, for the good of the said school;" and an award having been made accordingly, it was confirmed by decree on the 20th June, 1607, which provides that "the said John Manwaring, and Margaret, his wife, during the life of the said Margaret, and after the decease of the said Margaret, the said Thomas Ireland, being the owner of the Manor* of Warrington, where the said school is founded, his heirs and assigns shall have the nomination and appointment of the said schoolmaster, being an able man fit for that place, in consideration whereof, the said Thomas Ireland shall pay and bestow to and for the repairs of the said school the sum of £10, and to the said John Manwaring £20," and directions are given for the execution by all necessary parties of conveyances to new trustees, and for the future leasing and management of the trust estates, without the intervention of the master, "who shall attend his charge and have noe dealing with the setting and letting of the said lands, or imploying of the said stock or otherwise, save only with his rent and pension, and the use of the said stock, and the schoolmaster's house or chamber, with the crofts, &c., in Warrington, which order or forme of leasing is thought fit, notwithstanding the same be not expressed in the first foundation, because the late deceased schoolmaster there, having a lease from the feoffees, did assigne

* The patronage of the school did not accompany the manor of Warrington, in its transmission from the Irelands to the Booths, and from them to the Blackburnes; but seems to have been invariably exercised by the patrons of the parish church, the advowson of which has always belonged to the owners of the Bewsey estates, and is at present vested in Lord Lilford.

the same to the heir of the founder, contrary to the true intent of the foundation." The new feoffments were accordingly executed in the year 1608; and in 1610 a commission of charitable uses was issued, under which certain orders and decrees were made on the 11th September in that year, confirming the feoffments, and making provision, in accordance with the decree of the Duchy Court, for the management of the estates and the appointment of schoolmasters: and it is provided that the schoolmaster "shall by all the tyme that he shall be scholemaster of the said schole, well and truely keep the said schole, and teach and instruct the scholars thereof freely, without takeing or agreeing to have any reward, stipend, or schole-hyre, or any other thing, for teaching any scholar of the said schole, other than the stipend to be paid by the said feoffees or governors, and upon every schole day shall be and continue in the said schole three hours att the least in the forenoon, and three hours att the least in the afternoon, teachinge, hearinge, and examininge his schollers, if his health will permit, and shall every morning, together with his scholers, use some forme of prayer meet for the purpose, giveing thanks to God that stirred upp the hart of the founder, Sir Thomas Butler, Knight, to soe good a work, and likewise at night before they depart." The decree of the commissioners was duly confirmed; and thus the estates were restored to the foundation by the perseverance and public spirit of Sir Peter Warburton, who further testified his good will to the school by granting to it a rent-charge of £5 per annum, issuing out of a messuage in Chester. It is still received by the trustees; and though the altered value of money makes his gift of smaller pecuniary importance than he intended, it has entitled him to the gratitude of the inhabitants of Warrington, in testimony of which one of our public spirited antiquaries has deposited in our Museum a copy of Sir Peter's arms, from a window in the hall of Staple Inn, of which he was a Bencher. A drawing of the arms forms one of our illustrations.

The new system of management does not seem to have been much more successful than the old; for within about half a century we find the income of the school in danger of being almost wholly lost, in consequence of claims set up by the tenants to have their leases renewed at the almost nominal rents they were then paying. Active measures were taken, and the principal part of the tenants were brought to submit to take leases at rack rent in 1677. It will, however, be convenient to defer any notice of

the subscquent events affecting the history of the school, until I come to speak of the respective masters, of whom I am fortunately able, from various sources, to make out a tolerably complete list.

Sir Richard Taylor, the master appointed by the foundation deed, as little disturbed by the storms in the political and religious atmosphere as his contemporary, Symon Symonds, the veritable vicar of Bray (for I suppose it is settled that the vicar of "good king Charles's golden days" is a myth), appears to have retained his mastership during the reigns of Henry VIII., Edward VI., Mary, and Elizabeth; for he is last heard of on the 20th December, 1569, when he renewed a lease for ten years of part of the school estates in Wigan. I am not aware of any other mention of him, unless (as suggested by my friend, Mr. Beamont, to whom I am indebted for information and references on various points not specifically acknowledged) he be the person referred to in the Inquisitio post mortem of Sir Thomas Boteler, 4 July, 14 Hen. VIII., which finds that he was seized (inter alia) "De homagio et servitio Rici le Tailor."

John Wakefield probably succeeded him; for we find him as early as the 29th September, 1576, joining with the trustees in an assurance of the same lands. He took, under the will of Edward Butler, the great grandson of the founder, dated November 2, 1586, a legacy of £40, and was nominated one of his executors, but did not prove the will. He died in the year 1605, and was buried at Warrington on the 30th May in that year.

The entry in the parish register, on the 9th March in the same year (viz., 1605–6), of the baptism of a daughter of "Robert Martin, ludi magister," is perhaps too slight evidence of the person referred to having been master of Boteler's Free Grammar School; and in the year 1608 we find the name of Ottiwell Rynse, described as schoolmaster, attached to the feoffment above referred to, as a witness to the livery of seizin.

I know of no other mention of him; nor have I met with the name of any other master between him and Nathan Ashworth, whose name frequently occurs in the register of the baptism of his children. The earliest of these entries which describes him as "ludi magister" is that of a son, baptized on the 21st April, 1627; but there is an entry, in which his name occurs without that addition, on the 30th April, 1623, which may have been previous to his appointment, especially as the fact of his

having been a native of Warrington is rendered not improbable from a John Ashworth having been rector there from 1589 to 1607. The submission of the tenants to take leases at rack rent is attributed, in some memoranda on the school affairs, in the handwriting of Mr. Owen, one of the later masters, to the exertions of his predecessor, Samuel Shaw; but the date of the submissions, which are still in existence, shews that this was a mistake, and that the proceedings must have been commenced during the mastership of Ashworth; and as the trustees do not seem at this period to have interfered much with the charity, it was probably owing to his exertions, in a great measure, that the endowment was preserved. He was buried at Warrington, on the 13th February, 1672–3. He must have been the schoolmaster referred to, but not mentioned by name, in the *Life of Adam Martindale*, p. 176.

The name of JOHN WRIGHT occurs on the 14th August, 1677, occupying (as that of the master of the Grammar School usually did) the next place to the rector, in the minutes of the proceedings at a parish meeting. He was buried at the parish church on the 3rd September, 1679. It was during his mastership that the proceedings against the tenants were brought to a successful issue.

The name of "J. CLAYTON, sch. m^{r} de Warrington," occurs at parish meetings on the 22nd June, 1680, and 5th June, 1681; and the parish register records the burial, on the 10th November, 1686, of "Mr. JOSEPH WILLOTT, scholemaster of the Free Scoole," but I have met with no other mention of either of them.

SAMUEL SHAW succeeded to the mastership in 1687, having previously held a similar office at Wigan. The Diary of bishop Cartwright, published by the Camden Society, mentions that on his way to take possession of his bishopric, and of the rectory of Wigan, which about this period was frequently held in commendam with it, he was met at the latter place by the mayor and aldermen and a number of gentlemen, and saluted with an elegant speech in Latin, and as well delivered, by Mr. Shaw, the schoolmaster. Under the subsequent date of 28th January, 1687, he states that he gave Mr. Samuel Shaw, of Wigan, a licence to teach the Free School of Warrington. The favorable impression made on the bishop by the latin speech seems to have been a permanent one, as the diary contains frequent memoranda of the interchange of hospitalities between the prelate and the

master of the grammar school of Warrington. He considerably improved the master's house, and left a memorial of the fact in the shape of a stone tablet, still existing over the doorway, with the inscription "1688, Samuel Shaw, A.M." He obtained the consent of the trustees to the commencement of proceedings, at his own risk, for the recovery of some lands which were apparently lost to the charity, and which, after many years of litigation, were restored to the school. In 1690–1, he was presented to the rectory of Warrington, which was in the gift of the Atherton family. It was at this period of very little pecuniary value, an improvident lease for 200 years having been granted of the tithes, in the 34th year of Henry VIII., reserving a rent of £20, and the lessees covenanting with Edward Keble, the then rector, to find him and his successors a sufficient priest, to officiate in all sacramentals and services belonging to the church. The lease became part of the possessions of the owners of the Bewsey estates, who allowed the rector (as he was still called, notwithstanding the impropriation) to receive the small tithes, in lieu of having a priest found him according to the terms of the lease. We are informed by Mr. Canon Raines, in a note to *Gastrell's Notitia Cestriensis*, (ii, 233,) that Mr. Shaw held the office of King's preacher, being one of the four preachers sharing a royal stipend of £200, first established by Queen Elizabeth, and afterwards regulated by James I, "out of zeal to God's glory, and care of the souls of many thousands of his majesty's subjects within the county of Lancaster, there being great want of maintenance for preachers in most places of that shire," and appointed to preach among the impropriations there, according to the appointment of the bishop. In a letter to Bishop Stratford, in 1693, Mr. Shaw states that he, and others for him, had preached above forty sermons during the previous half year. His principal charge, as king's preacher, was Hollinfare, a chapelry within the parish of Warrington, where he preached two sermons per month, until a regular curate was found, in the person of the Rev. John Collier, the father of our Lancashire worthy, Tim Bobbin. Mr. Shaw continued to hold the office of master of the grammar school until his death, in the year 1718. He was buried at Warrington on the 30th September.

The Rev. John Tatlock was next nominated to the mastership, but the Bishop refused to license him. An extract from the correspondence of Bishop Gastrell, among the *Lanc. MSS.*, for which I am indebted to the kindness of Mr. Canon Raines, furnishes the grounds for the refusal. In

a letter dated from Christ Church, Oxford, 5th Nov., 1718, and addressed to his secretary at Chester, the Bishop writes:—"Mr. Tatlock holds the place for Mr. Hayward, till he is in orders, but I hope wthout Bond. If upon examination w^{n} he applies for a Licence you find he has given Bond, let him have none, and plead my generall order to you for your refusall. I have enclosed the nomination." The refusal of a licence on such grounds must be regarded as somewhat of a stretch of episcopal authority, for even if it had been as settled law then as it is now, that the appointment of masters of Grammar Schools is matter of ecclesiastical cognizance, there could have been no pretence for treating such an appointment as a *benefice*, so as to render a bond of resignation simoniacal; and I can imagine no other ground for the Bishop's objection. It was however submitted to. Mr. Tatlock resigned the appointment, and on the 22nd March, 1719–20, a nomination was made of the Rev. Thomas Hayward, M.A., of Brazennose College, Oxford, reciting the former nomination, the Bishop's refusal of a licence, and the resignation of Mr. Tatlock; and Mr. Hayward was duly licensed accordingly. He was born on the 5th February, 1695–6, a native of Warrington, and the son of Thomas Hayward, an attorney there. He was twice married, and had issue no less than 16 children. In an obituary notice of one of them (Francis Hayward, M.D., who died at Bath in the year 1831, at the advanced age of 92, and was the father-in-law of the Rev. Joseph Hunter, the learned assistant keeper of the records) it is stated that the Rev. Thomas Hayward was instituted to the vicarage of Garstang, on the 4th March, 1722, and resigned it in 1731, and about that time removed to Warrington. There is unquestionably an error in the date of the latter event, as I have procured my information direct from the original documents in the Episcopal registry at Chester. As early as the 31st March, 1719, we find Hayward's signature, with the addition of "ludi m^{r}," occurring next to that of the rector, in the proceedings of a parish meeting; and there is a receipt, signed by him and Anne Shaw, for rents due to the master in November, 1718, lodged, apparently by accident, with the documents at Chester. It may be inferred from these facts that, even during Tatlock's nominal mastership, Mr. Hayward was performing the duties and in receipt of the emoluments of the office. There can be no doubt, however, that his presentation to the vicarage of Garstang was subsequent to his appointment to the Grammar School; and accordingly, in a note to *Dr. Parkinson's "Old Church Clock,"* containing extracts from the diary of

Boteler's Free Grammar School at Warrington.

the Rev. Thomas Parkinson, curate of Garstang, in which it appears that Mr. Hayward officiated there at Easter, 1723 and 1724, it is stated that he was non-resident. In 1728, the Chapel of Sankey, near Warrington, which had up to that time been used as a Presbyterian place of worship, was rebuilt, and placed under Episcopal government, *(Notitia Cest.* ii, 215,*)* and Mr. Hayward became incumbent, which probably led him to resign his living at Garstang; but he continued to fill the office of master of the Grammar School. The obituary notice above mentioned, quotes the biographer of Dr. Percival, who was one of Mr. Hayward's pupils, for Mr. Hayward's character as "an able but severe master, an admirable scholar, and a very useful man." He is mentioned also in the *Remains of John Byrom, (*i, 315*)* who addresses a sportive invitation in verse to him and Mr. Haddon, the rector of Warrington. The error in the note to the passage referred to, naming 1731 as the date of his death, is attributable to Baines. Mr. Hayward died in 1757, and was buried at Warrington on the 2nd September.

The Rev. JAMES ANSDELL, of Bunwell, Norfolk, was nominated to succeed him, and presented to the bishop, if not actually licensed; but he subsequently wrote to the bishop, that in consequence of the augmentation of his salary he had determined to continue his residence there; and he accordingly resigned the appointment, and on the 4th November, 1757, the Rev. EDWARD OWEN, M.A., then usher of Great Crosby School, as stated in a memorandum endorsed on his appointment, in the Episcopal registry, was nominated in his stead. He states, in some memoranda to which I have had access, that he found the school in a dilapidated condition, the building in ruins, the roof ready to fall in, and the floors and walls all clay. He at once put it into a state of thorough repair, converting some outbuildings into a dining room and bedrooms, and rendering the house fit for the reception of boarders, which, he states, it never was before. Mr Owen was a scholar, whose attainments were eminently calculated to extend the reputation of the school; and it seems accordingly to have been in a flourishing condition during the early years of his mastership. Among his scholars, who in after life attained a position of eminence, the name of the Rt. Hon. George Tierney deserves to be particularized. Mr. Owen's translation of Juvenal and Persius, published in two vols. 12mo. in 1785, when he must have attained the ripe age of 57, or thereabouts, has given him a permanent place in classical literature, though it has not maintained

its ground against the spirited translation of Gifford. He also published in 1770 a Latin Grammar, under the title of "The Common Accidence improved." From the preface to a new edition, published in 1800, it appears to have been adopted in various schools, where "the masters felt themselves under no restraint from local statutes, or the ascendancy of custom or fashion." In the year 1767, the rectory of Warrington, now improved in value by the falling in of the lease granted in the reign of Henry VIII., became vacant by the death of the Rev. William Farington; and the patron, Mr. Gwyllim, presented Mr. Owen to the living, in testimony of respect for his attainments. He continued to reside at the school-house, the rectory being in a somewhat dilapidated condition, and retained his mastership until his death. His personal and literary merits are attested by Gilbert Wakefield, whose praises can scarcely be suspected of proceeding from a too partial source, and who, while doing justice to the "propriety, perspicuity, and elegance of his style," speaks of him as "a man of most elegant learning, unimpeachable veracity, and peculiar benevolence of heart." It must be confessed, that during the latter years of his mastership, his increasing years, infirmity, and deafness incapacitated him in a great measure for the duties of his office; and the school seems at this period to have lost much of its usefulness. He appears, from his will, which mentions several relatives in Montgomeryshire, to have been connected, both by family and property, with that county. He died in the year 1807, at the age of 79, and was interred, according to the directions of his will, "in the chancel of the church of Warrington, on the south side of the grave of Samuel Shaw, a very worthy predecessor of his, and the place of his interment marked with a small square marble, inscribed only with his name and title, age, and time of decease." A portrait, which persons still living, who remember him, pronounce an admirable likeness, is in the possession of Miss Lee, of Grappenhall.

The Rev. Robert Atherton Rawstorne was appointed to succeed him as master; and having within a few months afterwards been presented to the rectory, he appointed the Rev. William Bordman, as his usher, to whom he left the entire management of the school, and allowed him the use of the school-house, thus converting the mastership into a sinecure, and exciting the resistance of the inhabitants of Warrington, who had seen with regret the gradual decay of the school, and had only been deterred from taking active measures by the consideration that the course of nature must

shortly terminate the mastership of Mr. Owen. In 1810, an information was filed in the Court of Chancery, at the instance of several influential inhabitants, in order to test the right of Lord Lilford to the patronage of the school, and to procure a declaration of the court that the office of master was incompatible with that of rector of the parish. In the first of these objects the promoters of the suit failed; but the court, in 1814, pronounced a decree, declaring the incompatibility of the offices, and that Mr. Rawstorne, by accepting the living, had vacated the mastership.

The Rev. WILLIAM BORDMAN, M.A., who, as usher to Mr. Rawstorne, had practically been the master of the school since 1808, was thereupon formally appointed master in 1815. He had previously been second master to Dr. Valpy, at Reading, and was a person of no mean attainments; but the circumstances under which he commenced his mastership were not conducive to his popularity, and he acquired, whether justly or unjustly, the reputation of being one of those "Ajaces flagelliferi," whose race is fast disappearing under the humanizing influence of public opinion at the present day. Repeated complaints against him came under the notice of the trustees, and eventually an arrangement was proposed in 1827, and carried into effect in the following year, by which, in consideration of a round sum of £400, and a pension of £150 per annum, to be deducted from the income of his successor, he resigned his mastership. He was living, a few years ago, at Honfleur.

In the meantime, the Chancery suit had resulted in the establishment, in the year 1820, of a scheme for the future management of the school, providing for such an extension of the plan of education as was consistent with the primary object of the foundation, as "a school for teaching grammatically the learned languages;" and a brighter prospect opened. I have no means of tracing the circumstances which led to the appointment of any of the masters previous to Mr. Rawstorne; but it is satisfactory to find evidence that at all events his three immediate predecessors, whose masterships extended over 120 years, were all men of attainments well qualifying them for the office. On Mr. Rawstorne's appointment the mastership seems to have been treated as a mere appendage to the rectory; and when this arrangement was defeated, the appointment, as his successor, of the gentleman whom he had selected to perform the duties of the office as his deputy, followed almost by accident. On the resignation of Mr. Bordman, the patron proceeded to an appointment in the manner best

calculated to promote the interests of the school, and selected, as the most eligible candidate for the office, the Rev. THOMAS VERE BAYNE, of Jesus College, Oxford, and, I believe, a native of that city. He was born on the 25th of October, 1803. Under his mastership the school speedily recovered the popularity which it had lost under his predecessor, and its increased efficiency was manifested in the imperative necessity for accommodation for an increased number of scholars. In the year 1829, with the sanction of the Court of Chancery, a fund, which in the course of the litigation had been paid into court, was expended in the erection of a school, capable of accommodating 120 boys. It is a plain stone building, with little pretension to architectural effect, and forms one of our illustrations. While I avow the partiality of an attached pupil, owing to Mr. Bayne the most valuable portion of my education, I may be excused from discussing his merits; but few will deny him the character of an accomplished classical scholar. He resigned his mastership in the year 1842, to accept the incumbency of St. John's Church, Broughton, and died on the 22nd of December, 1848.

His successor was the Rev. HENRY BOSTOCK, M.A., of Wadham College, Oxford, formerly master of the Grammar School at Aylesbury, which he left to accept his present appointment. He was selected, like his predecessor, from a number of candidates, solely with reference to his scholastic attainments. The success which has attended his pupils is the best evidence of his abilities as a teacher. The small population of Warrington cannot be expected to furnish many scholars to proceed to the Universities, and it is therefore gratifying to notice that of those who have done so during Mr. Bostock's mastership, five have obtained scholarships and prizes at Oxford and Cambridge—a sixth has attained to distinguished honours, both in classics and mathematics, at the University of Durham—and a seventh, after obtaining a scholarship and mathematical prize at Cambridge, has within the last month taken a Wrangler's degree.

With such evidence, I need say nothing of the present condition of the school; and it only remains for me to mention, by way of bringing down its history to the present time, that in 1840, the sale, on what appeared very advantageous terms, of a portion of the school estates, afforded an opportunity of obtaining, at the purchaser's expense, an act for regulating the future management of the school; and the education which it at present affords is one alike consistent with the views of the founder and with the

requirements of modern times. Though it does not profess to give a commercial education, in the sense entertained by those who will not recognize the utility of any knowledge which is not available for the immediate purposes of the counting-house, the instruction afforded is by no means confined to Greek and Latin; but while opportunities are afforded for the study of modern languages, the ordinary course of study embraces even the higher branches of mathematics, and, in fact, such an education as qualifies its scholars to take their places in the world as educated men, or to compete at the Universities, as we have seen they can do, with pupils from the most celebrated of our educational foundations. I am well aware that popular feeling is by no means unanimous in regarding an education such as that afforded at Boteler's Free Grammar School as the most desirable to be adopted in a manufacturing town; but I entertain a strong opinion that, in keeping up a certain amount of classical knowledge, the Grammar Schools of this kingdom are rendering a service to the country, which would not be effected by institutions partaking of a more commercial character. Such schools as the opponents of classical learning would wish to see established in their place would at best only be rivals of private establishments, at which the instruction intended for those who seek no higher degree of mental cultivation than will fit them for the pursuits of retail trade is in every town procurable, at a cost, the saving of which was not the object of the founders of our Grammar Schools; while, on the other hand, an education fitted to qualify a youth for one of the learned professions, or for an honorable career at the Universities, would, but for institutions like Boteler's Free Grammar School at Warrington, be almost inaccessible to any but the sons of the wealthy.

THE ANCIENT GEOMETRICAL ANALYSIS, ILLUSTRATED FROM THE WRITINGS OF THE LANCASHIRE GEOMETERS.

By T. T. Wilkinson, F.R.A.S., &c., &c.

(READ 15TH MAY, 1856.)

The cultivation of the Ancient Geometrical Analysis appears to have been a favourite subject with the mathematicians of the sixteenth and seventeenth centuries. During the former period, Commandine completed his translation of the *Mathematical Collections of Pappus*, which he enriched with numerous additions of his own; Vieta published a Restoration of *Apollonius on Tangencies;* and our own countryman, Dr. Dee, prefixed his celebrated preface to what is usually known as Billingsley's *Euclid.* The latter period is more particularly distinguished for the many attempts to restore the lost treatises of the Greek geometers, and to exemplify the true nature of their methods of discussing geometrical propositions. Amongst those who succeeded best in these respects, we may instance Ghetaldus, who reproduced the *Inclinations*, and furnished a supplement to Vieta on the *Tangencies;* Snellius, who wrote on the *Determinate Section* and the *Sections of Ratio and of Space;* Schooten and Fermat, who either wholly or partially considered the *Plane Loci* and the *Porisms.* Besides these, we may enumerate the names of Sir Henry Saville, Anderson, Gregory St. Vincent, Pascal, Desargues, Girard, Hugo D'Omerique, Huyghens, and more latterly, Halley, Simson, and Stewart; all of whom contributed by their writings and example to revive a taste for the study of those forms of pure geometry, which had lain dormant for more than a thousand years after the Saracens destroyed the library at Alexandria.

It must not, however, be concluded from the presence of several English names of good repute in the preceding enumeration, that the study of the ancient geometry was then pursued so sedulously and so successfully in this country as on the continent. The names of Halley, Simson, and Stewart, belong to the eighteenth century rather than to an earlier date. They formed, too, almost isolated instances in their respective generations, and

the state of geometrical science even at the Universities of Cambridge and Oxford may be judged of from the fact that Sir Isaac Newton always blamed himself for having studied the works of Des Cartes, and other algebraical writers, at the commencement of his mathematical studies, before he had paid due attention to the *Elements of Euclid*.

It was not until after the publication of Thomas Simpson's *Algebra* and *Geometry*, which contained a large collection of geometrical problems constructed and demonstrated, that the taste for pure geometry began to diffuse itself amongst our mathematicians generally. His *Select Exercises* laid down the principles of the ancient geometrical analysis in a manner intelligible to the majority of students; and the publication of geometrical questions in the *Lady's* and *Gentleman's Diaries*, and other similar works, paved the way for that complete development of the system which took place after the Rev. John Lawson had rendered the attempted restorations of the works of Apollonius, and a sketch of the Porisms of Euclid, accessible to non-academic readers. The works of Halley, Simson, and Stewart, from the circumstance of their being written in Latin, were sealed books to the great bulk of those whose names appear in the periodical scientific literature of the day, and had it not been for the aids just noticed, most probably the complaint made by Dr. Simson in 1767, that "the taste for the ancient geometry, or indeed any geometry, seems to be quite worn out," would have been every whit as just half a century later, as it was during the period in which his Latin treatise on the *Loci Plani* "did not sell."

At the very time, however, that Dr. Simson was thus despairing of his favourite science, a band of men was rapidly forming in the north and south of England, whose lives were to be consecrated to the study of pure geometry; and although the sound of their fame had not then penetrated the seclusion of his Alma Mater, the labors of themselves and their pupils were destined ultimately to change the whole face of mathematical science, and even to induce a return to more logical systems in the leading educational institutions of the country. The *Lady's Diary*, the *Mathematician*, the *Mathematical Exercises*, and the *British Oracle*, conducted by Simpson, Rollinson, Turner, and Lawson, laid the foundations of the reform during the lifetime of the Glasgow professor; and after his decease, the *Gentleman's Diary*, the *Mathematical Repository*, the *Mathematical Companion*,

and numerous minor serials, under the direction of Wildbore, Leybourn, Hutton, Hampshire, Davis, and others, continued to foster the study and develop the powers of such proficients in our own county as Butterworth, Wolfenden, Smith, Hilton, Cunliffe, Bazley, Campbell, Simpson, Kay, Holt, and Swale.

The Greek geometers are well known to have divided their course of study into what they termed the *first* and *second* elements. The former they subdivided into two parts, corresponding respectively to our elementary principles, and the practical measurement of plane figures; the latter contained the whole of those ingenious speculations of Euclid, Apollonius, and others, which find their counterpart in the higher geometry of the Continental mathematicians. According to Pappus, they were accustomed to employ two methods for the demonstration or discovery of geometrical truths. The first process was termed Analysis, or the resolution into parts; the second received the name of Synthesis, since it consisted principally of the art of composition. By analysis is meant that process of reasoning by which we proceed, step by step, from the entities sought, as taken for granted, until we arrive at one or more simple truths already known; whence we conclude that the entities supposed to be given, or true, at the outset are really so, and the steps by which we arrived at the simple known truths are generally such as to indicate the construction and demonstration of the proposition, or, at all events, to point out its impossibility under the given conditions. Synthesis, on the contrary, commences by advancing some known truth, or truths, respecting the proposition proposed, and it proceeds, step by step, to the theorem required to be demonstrated, or to the problem to be constructed. Analysis, in fact, searches the given—Synthesis gives the sought; whilst both may be regarded as general types of the *re*gressive and *pro*gressive forms of logical deduction.

When applied to purely geometrical enquiries, the two methods differ only in their point of departure, for the reverse of one process always reproduces the other. In the application of the analytical process to the demonstration of theorems, or to the construction of problems, we first of all suppose the theorem to be true, or the problem to be actually constructed. We then proceed to examine such consequences as may result from these admissions, by calling in the aid of any other properties of the requisite diagrams which may be already known. Should these consequences prove

to be false, the process constitutes a *reductio ad absurdum*, which proves that the supposed theorem is not true, or that the construction of the proposed problem is impossible from the given data; but if none of these happen to be known truths, or possible operations, we must examine other consequences in connection with other properties of the diagrams, until we arrive at a result which is already known to be true, or a construction which is admitted to be possible. When such is the case. the analysis properly ends, since it is obviously unnecessary to trace every thing back to the *elements* or to the *data* of Euclid, and nothing more remains for the student to do than to deduce his construction and add the synthesis or demonstration, by reversing the steps of the analysis.

From what precedes, it is evident that the analytical process is most properly applied to the solution of problems, whilst synthesis adapts itself more particularly to the demonstration of theorems. The former is professedly the instrument of research and a means of invention, by which new truths are discovered; the latter adds to our knowledge by demonstrating the truth of those relations which have presented themselves, either accidentally, or from necessity, during the process of resolution. It is impossible to lay down any general rules, by which all geometrical analyses may be conducted. The nature of the inquiry, and the relations which exist amongst the data, exercise an influence which must not be neglected in the selection of the course to be pursued. In particular cases, lines must be drawn in certain directions, of given lengths, or having given ratios; angles must be formed at given points, of given magnitudes; circles must be described with given radii, from given centres; the intersections of certain loci are sometimes either to be obtained or conceived; tangents must be drawn from given points to given circles; and many other contrivances which daily present themselves to the geometer must occasionally be taken advantage of, before the demonstration of a theorem or the construction of a problem can be obtained; and it is in a ready selection of the best means, and in the judicious disposal of such preliminary constructions and arrangements, that the superiority of an adept renders itself manifest. There is a *taste* and an *elegance* to be found in geometrical processes quite as marked in character as the *sublime* and the *beautiful* in poetry or prose; and the gifted geometer is as easily distinguished by his writings as the talented author of a novel, a history, or a poem; for although the inspirations of genius may manifest themselves in

totally opposite directions, they are as clearly discernible in the walks of abstract science as they are in the more widely appreciated pursuits of literature.

The complete resolution of any proposition by means of the ancient geometrical analysis, generally consists of *six* distinct parts, although in some particular cases, one or more of these may be conveniently omitted. We have—

Firstly—the hypothesis and preparatory construction.

Secondly—the examination of the relations existing amongst the data and quæsita of the proposition.

Thirdly—the construction or final solution.

Fourthly—the demonstration.

Fifthly—the discussion of particular cases, and the determination of the limits within which the problem is possible.

Sixthly—the corollaries deducible from the whole of the process.

The hypothesis and preliminary construction are obviously essential to every geometrical proposition; but the former may be deficient or redundant, according as the data are too few, or too many, or not sufficiently limited to enable the geometer to attain the object proposed; whilst the latter may consist merely of the most simple operations. In all cases where the analysis and construction are given, the synthesis or demonstration may be, and generally is, omitted; and, on the other hand, the analysis is not often required where the construction and demonstration are given at length. The ancient geometers, however, appear to have been very careful to furnish all the parts of a solution in consecutive order, nor did they rest satisfied until they had thoroughly examined all the special cases of the subject of inquiry. The moderns do not often imitate them in this respect, but content themselves, in most instances, with giving the solution of a general case, and leaving the particulars to be elicited by the student. The Greek geometers were accustomed to proceed from the *particular* to the *general* by a series of easy gradations; we usually attack the general proposition at once, and deduce the particulars from the results.

As an illustration of the application of analysis and synthesis to the investigation of the truth of a theorem, we may select the nineteenth proposition of Dr. Matthew Stewart's *Propositiones Geometricæ*. Its solu-

tion offers little difficulty, nor does it require much preliminary construction, but it is not the less valuable as an example, since it presents a perfect specimen of the entire agreement of both processes when taken in *direct* and *reverse* order.

THEOREM.

If from any point C in the diameter of a circle AB produced, a tangent be drawn to the circle; and if from the point of contact D a perpendicular DE be demitted upon the diameter; then will AC : CB : : AE : EB.

ANALYSIS.

Suppose the theorem true, and let ADB *(fig.* 1) be the circle, F its centre, AB its diameter, C the point in the diameter produced, D the point of contact, and DE the perpendicular. Join FD.

"Then since AC : BC : : AE : BE,
and AB is bisected in F,
[by a known property] we have CE. FE = AE. EB,
Add EF^2 to each of these rectangles.
Then CF. FE = AF^2 = DF^2,
. ·. CF : DF : : DF : EF,
or the triangles CDF and EDF are equiangular.
. ·. angle CDF = angle DEF.
But the angle DEF is a right angle,
. ·. the angle CDF is also a right angle, and
. ·. CD touches the circle at D."

SYNTHESIS.

Premising the same preliminary construction as before, we find that—

"Because CD touches the circle at D,
the angle CDF will be a right angle;
and since DEF is a right angle,
the angle DEF = angle CDF and
the triangles EDF and CDF are equiangular.
. ·. CF : DF : : DF : EF,
and . ·. CF. FE = DF^2 = AF^2.
Take EF^2 from each of these,
. ·. CE. EF = AE. EB.
But AB is bisected in F, and consequently
[by the preceding known property]
AC : BC : : AE : BE." Q. E. D.

This theorem forms a fundamental proposition in the modern doctrine of poles and polars, with regard to the circle. C is the *pole*, DE the *polar*, and the enunciation merely states the fact that they divide the diameter, or indeed *any* line drawn to cut the circles, in harmonic proportion. The property is also true with respect to the conic sections, as may be seen by referring to La Hire's treatise on the subject, published A.D. 1685, and to many later works.

Almost the whole art of solving geometrical propositions consists in reducing the given data, and their relations to each other, to more simple forms. The greater the number of data, or their relative non-connection with each other, the greater, in general, will be the difficulty of the analysis. The object of this process is confessedly to diminish the number of separate data, until we arrive at the simplest possible conclusion, or the case where there is only one entity to determine; and hence we find that many of the more difficult geometrical inquiries are gradually traced through a series of more and more simple propositions, until we arrive at one respecting which there can be no difficulty. Thus, if it were required to solve the following :—

PROBLEM.

"In the triangle ABC, place a right line DE, such, that the non-adjacent segments DB, EC, and the line DE, shall have given ratios to each other." (Lamé's *Examen de Different Methodes en Géométrie.)*

ANALYSIS.

Suppose DE *(fig. 2)* to be the line drawn as required; draw DF and CF parallel to AC and DE respectively; also join BF and produce it to meet AC produced in G. Then AG : AB : : DF : BD : : EC : BD.

But EC : BD is a given ratio by hypothesis,
and consequently AG : AB is a given ratio.

The triangle ABG is therefore given and may readily be constructed, which reduces the problem to that of 'having given the triangle ABG and a point C in its base, to draw a right line DF parallel to AG, so that DF : FC may be a given ratio.'

Again, suppose the thing done, and draw GX parallel to FC, meeting BC produced in X, if necessary.

Then GX : FC : : BG : BF : : GA : FD.
And GX : GA : : FC : FD : : ED : EC.

But this last ratio ED : EC is given, and consequently the problem is further reduced to that of finding 'a point X upon the line BC such that GX : GA may have a given ratio to each other.' This is obviously nothing more than finding a fourth proportional to three given lines [and hence the analysis properly ends at this stage of the process]. It may be remarked, however, that there are two points X and X^1, which satisfy the conditions, and consequently the problem admits of the two solutions indicated by the diagram."

In like manner, if it were proposed "to describe a circle (O) to touch three given circles (O_1), (O_2), (O_3), whose radii are respectively r_1, r_2, r_3"; we may suppose the problem solved, and that an auxiliary circle is described with centre (O) to pass through O_1 and touch two circles having their centres at O_2, O_3, and radii $= r_2 - r_1$ and $r_3 - r_1$ respectively. Were this auxiliary circle actually described, or determined, the proposed object would evidently be accomplished; but since this is not the case, the question is now merely reduced to that of "describing a circle through a given point, which shall touch two given circles." By again supposing this latter problem solved, a very easy analysis conducts us to the *double* problem of "producing a given line, so that the product of its segments shall be equal to a given rectangle," and of "describing a circle which shall pass through two given points, and touch a given circle." The former offers no difficulty whatever, whilst the latter, by an almost obvious process, comes at once to the simple operation of "describing a circle through three given points;" and, consequently, by collecting the operations contained in the various steps of these analyses, the construction of the original problem is gradually evolved.

When a similar method of procedure is adopted, the "inscription of a polygon in a given circle, so that its sides and diagonals shall pass through given points" is reduced—*firstly*, to that of "describing a triangle in the circle," subject to similar conditions; *secondly*, to that of drawing two lines from two given points to intersect in the circumference of a given circle, such, that their chord of intersection shall be parallel to a given line;" *thirdly*, to that of "drawing a line through a given point, so as to cut off a given arc from a given circle;" and *lastly*, to that of "drawing a line

from the given point to cut the given circle, so that the intercepted chord shall be of a given length;" a problem which obviously requires no further reduction. Both of these general problems possess considerable historic interest. The former is well known as the principal case of Apollonius on *Tangencies*, whilst the latter, besides being intimately connected with the difficult subject of *Porisms*, has occupied the attention of several of the most eminent mathematicians, both of this country and on the continent. The principles of their various methods of investigation have been amply discussed by Professor Davies, in the third volume of the *Mathematician*, and Mr. J. H. Swale has reduced the whole to very simple processes in the two numbers of his *Liverpool Apollonius*.

The construction of plane triangles from given data has long been a subject much cultivated by non-academic and other geometers. Its interest is at least as old as Pappus, and it was pursued to a considerable extent in more recent times, by De Billy, Hugo D'Omerique, and other writers of later date. Sir Isaac Newton gave some examples of this kind, treated by Algebra, in his *Arithmetica Universalis*, and Thomas Simpson added many more general cases to the number, in the appendices to his treatises on *Algebra* and *Geometry*, but the full development of the system was reserved for the correspondents of our mathematical periodicals. Synopses of data for the construction of triangles have been published at different times by Lawson, Leybourn, Farey, and others; whilst the more intimately connected properties gradually evolved during the consideration of particular cases have been collected under the heads of "Modern Geometry," in the *Student;* "Symmetrical Properties" in the *Philosophical Magazine* and in the *Repository;* and the more recent "Horæ Geometricæ," in the *Lady's and Gentleman's Diary*. It does not, however, appear that the results have been at all commensurate with the vast amount of labor expended upon such constructions. Most questions of this nature may be more justly described as "ingenious puzzles," than as aids to the real progress of the student, and hence of late years the practice of proposing such problems has justly fallen into neglect. For occasional praxis, they may be resorted to with considerable advantage, but to carry them to the extent which they occupy in the *Mathematical Companion*, and other similar works, is "geometrical trifling" of the most unprofitable description.

In some instances, however, the analysis conducts us to results, or to

properties of the requisite diagrams, which no other process would readily supply; and not a few examples might be adduced where one or more of the great problems of antiquity lie hid under the disguise of the data for constructing a plane triangle. Thus, when "the base, the vertical angle, and the ratio which the line bisecting the vertical angle has to the difference of the segments of the base," are given, the construction is proved by Mr. Swale to hinge on a case of determinate section. When "one side an adjacent angle, the area, &c., of a quadrilateral," are given, the construction is reduced by the same author to a case of the section of space; and he received the "prize medal" for solving question 240 in the old series of the *Repository*, which contains several properties relating to the curious, and then little known, subject of porisms. In the *Leeds Correspondent*, the *Companion*, and other periodicals, we might point out other instances in which the tangencies, the inclinations, &c., are evolved from data, which at the outset contain no visible traces of any such close connection with these noted problems. All cases of this description ought to be excepted from those to which the preceding objections more particularly apply, since they obviously exercise the powers of the student, at the same time that they add to his knowledge of the ramifications of the leading problems of the ancient geometry. We may add, that when any proposed question had been reduced by analysis to a case of these "second elements," the Greek geometers were accustomed to consider it as sufficiently solved, and the moderns have generally followed their example in this particular. As an illustration of the method of considering a problem relating to the construction of a triangle, we may select the following from the very elegant *Lucubrations in Mathematics*, by the late Colin Campbell, Esq., of Dingle Mount, Liverpool, in which the analysis, construction, and demonstration are given at length.

PROBLEM.

"Given the sum of the sides, the vertical angle, and the length of a line drawn from one of the angles at the base, to divide the opposite side in a given ratio; to construct the plane triangle.

ANALYSIS.

Let ABC *(fig. 3)* be the required triangle, and AD the given line, dividing in D the side BC, which produce to E, making CE = AC, and join AE; draw BH parallel to AC, meeting AD produced in H, and O,

R, being the centres of circles described through ADE, DHB, demit OF, RG, perpendicular to EB, and OI to RG. Then CD : DB :: AD : DH, which is therefore given, consequently the circles AED, DBH, are given; therefore OR (joining their centres) is given, as is also OI = FG = ½ EB; hence the angle IOR is given, wherefore IO, and thence EB, being parallel to it, and passing through the given point D, is given in position.

CONSTRUCTION.

Make the third datum AD : DH in the given ratio of the segments into which one of the sides is to be divided by AD, and on opposite sides of AH, describe DBH, AED, segments of circles to contain the given vertical angle, and its half respectively; join O, R, the centres of the circles, and on OR describe a semicircle, to which apply the chord OI = half the given sum of the sides, and parallel thereto, through D, draw EB, in which take DC : DB :: AD : DH; and having joined AC, AB, ABC will be the required triangle.

DEMONSTRATION.

Join AE, and draw IR to cut EB in G; on EB demit the perpendicular OF; and because DC : DB :: AD : DH; AC is parallel to BH; consequently the angle DBH = ACB = the given vertical angle by construction. Also since the angle ACB = CAE + AEC = 2AEC by construction, the angle AEC = EAC, therefore AC = CE, and, consequently, AC + CB = BE = 2FG = 2OI."

Q.E.D.

When considering geometrical problems it frequently serves a useful purpose to examine the *number* of solutions of which they are capable, as well as the *limits* within which they are possible. The latter is by far the more difficult inquiry; for the process sometimes requires a greater amount of skill and sagacity than the analysis of the original problem. On the other hand, we are amply compensated for the extra labour by the discovery of a multitude of beautiful properties relating to the *maxima* and *minima* of the quantities under consideration. If, for instance, it were required "to draw through a given point a parallel to a given right line, there can only be *one* solution possible; but if we had a given point, and were required "to draw a tangent from this point to a given circle," there would obviously be *two* solutions to the problem. We may, in general,

draw *four* common tangents to two given non-concentric circles, and we find no fewer than *eight* different solutions to the general problem of describing a "circle to touch three given circumferences." If, however, we had "to construct an isosceles triangle on a given base," or "to describe a circle through two given points," we have evidently too few data in each case to limit the problems, and the solutions therefore become *infinite* in number. Such problems as admit of a certain number of solutions are styled *determinate*, whilst the name of *indeterminate* is applied to those which can be satisfied by an unlimited number of solutions. When the object of inquiry relates to the position of a point, and it is found that an infinite number of points can be assigned, each of which satisfies the requisite conditions, the line traced out by these points is termed a *locus*;—if we "make the construction of the figure a part of the hypothesis, we have what was called by the ancients a *local theorem*; and, again, if, in enunciating this theorem, that part of the hypothesis which contains the construction be suppressed, the proposition arising thence will be a *porism*." (*Playfair on Porisms, Edin. Trans.* vol. iii. p. 171.)

The locus of the vertex of the triangle, and of the centre of the circle, in the instances just adduced, are obviously the perpendicular bisectors of the base, and of the line joining the two points; the loci of the vertices of all the equal triangles which can be constructed on the same base, and of all triangles having the same base and equal vertical angles, are a straight line and a circle respectively; and most propositions of this nature might be transformed, if necessary, into their corresponding local theorems and porisms by adhering to the preceding instructions. "Every indeterminate problem," says Mr. Potts, in his excellent edition of Euclid, "containing a locus may be made to assume the form of a porism, but not the converse, for porisms are of a more general nature than indeterminate problems which involve a locus."

It is, however, to the utility of *loci* in the construction of geometrical problems that we would now more particularly direct attention. If it were required to "determine the locus of all points from which tangents drawn to a given circle shall contain a given angle," an easy process will show that *any* point of a certain circle, concentric to the given one, will possess the property required;—and the *use* of this locus becomes at once apparent when "two circles are given, and a point is required from which

tangents to the circles shall contain given angles;" for the intersections of the two circles corresponding to the preceding locus in each case will evidently give the positions of the points answering the conditions of the problem. When the base and vertical angle of a triangle are given, the locus of the centres of the inscribed and escribed circle touching the base is well known to be a circle, whose centre bisects the arc subtending the base, and whose radius is equal to the chord of half the same arc, and this locus is of constant use in the construction of problems relating to the data of Halley's Diagram. Many other simple loci are equally efficacious, and much advantage may always be gained by availing ourselves of their intersections amongst themselves, or with the other data, whenever they are found to occur in the analysis of a problem. An instructive instance of this will be found in the solution of the following question, which, besides being possessed of some historic interest, recommends itself to the notice of the student by the variety of methods which may be adopted for its construction.

Problem.

Place a triangle, similar to a given one, so that its angular points shall rest upon the circumferences of three given concentric circles.

Analysis.

Suppose the problem solved:—ABC (fig. 4) the required triangle; O the common centre of the three circles; OA, OB, OC, their radii respectively. Take any point m in OA; draw mn, mp, parallel to AB, AC, and join np. Then, since the triangle m n p is similar to ABC, it is given in species, and by reason of parallels we have,

$$AO : BO :: mO : nO$$
$$AO : CO :: mO : pO; \text{ whence}$$
$$mO : nO \text{ and } mO : pO \text{ are given ratios.}$$

But when two points and the ratio of two lines drawn from them are given, the locus of their intersection is a given circle, and, consequently, the point O is at one of the intersections of two given circular loci. Hence the following

Construction.

Make the triangle m n p similar to the given one, and determine the point O by constructing the two circular loci corresponding to m n, m p,

and the given ratios m O : n O, and m O : p O, respectively. Join O m, O n, O p, and prolong them until they are respectively equal to OA, OB, and OC. Lastly, with these radii describe the three concentric circles, join AB, AC, BC, and ABC will be the triangle required.

The *Demonstration* is obvious from the Analysis. Particular cases of the general problem of "placing a triangle, similar to a given triangle, so that its angular points shall lie upon three circles anyhow given in position and magnitude," have frequently occupied the attention of English geometers. Mr. William Wales considered one of its cases, when engaged in observing the transit of Venus, on the shores of Hudson's Bay, in 1768, and other varieties were noticed by Professors Wallace and Davies in the *Repository*, and in the *Gentleman's Diary*. Mr. Swale constructed and demonstrated the case just considered as question 229 in the *Leeds Correspondent*; and Mr. William Shepherd, of Bradford, has recently supplied an elegant discussion of the most general case of the problem in No. 1617 of the *Mechanics' Magazine*. For the sake of comparison we may append Mr. Swale's construction adapted to the preceding diagram.

CONSTRUCTION.

"Let m n p be a triangle similar to the given one, and O the centre of the given circles OC, OA, OB. Draw any radius OC; make the angle OCP = m n p, and OC : CP :: n p : n m; to the circle OA apply AP, so that n p : n m :: OB : AP; draw CA, CB, AB, making the angle ACB = PCO : — the required triangle is ACB." (*Leeds Correspondent*, vol. iii. p. 286.)

It remains to assign the *limits* of the problem. Since the loci intersect twice, there will in general be two distinct solutions; but when the circles *touch* at O, only one solution is possible; lastly, when the loci neither cut nor touch, the problem becomes impossible. When two of the given circles coincide, the construction and solutions remain the same as before; two of the angular points of the required triangle lie on one circumference, and O is determined by the intersection of a straight line and a circle;— but when all the three circles coalesce, the problem admits of no more than one solution, since the loci then become straight lines, and O is determined by their intersection.

We have previously remarked that the Greek geometers did not consider

any proposition as completely solved until they had examined every particular case and determined the limits within which the theorem or problem under consideration was possible. The determination of such limits constitutes what is now known as the doctrine of maxima and minima. "Such propositions," says Mr. Potts, in his *Appendix to Euclid*, "as directly relate to maxima and minima may be proposed either as theorems or problems. For the most part, however, it is the more general practice to propose them as problems; but this has most probably arisen from the greater brevity of the enunciations under this form. When proposed as a problem there is greater difficulty involved in the solution, as it is required to find the limits with respect to *increase* and *decrease*, and then to prove the truth of the construction; whereas in the form of a theorem the construction itself is given in the hypothesis."

In many of the more simple instances, however, it is possible to infer the maximum and minimum cases without a formal process. Thus in *Euclid* i. 22, the *minimum* case is, obviously, that when the sum of the sides exactly equals the base, and at this limit the problem ceases to be possible; also in *Euclid* ii. 5, the magnitude of the rectangle is easily seen to vary from zero to the *maximum* when the two segments are equal to each other; and again in *Euclid* iii. 7-8, we find the *maximum* and *minimum* cases on the lines passing through the centre, whether the given point lies within, on, or without the given circle. When two points and a straight line are given in position, the sum of two lines drawn from the given points to intersect on the given line will be a *minimum* when they make equal angles with that line; but if a circle be substituted for the line, the *minimum* takes place when the lines make equal angles with a tangent applied at the point of inflection, or with a diameter drawn to the same point, and the case of the *maximum*, or when the sum of the lines is the greatest possible, occurs under the same conditions at the opposite extremity of the diameter. The demonstration of all these properties is very easy when they are enunciated as theorems, nor do some of them offer much more difficulty even when proposed as problems. Such, however, is not the case when we have given two points and a circle, and it is required to determine a point in its circumference, such that the sum of two lines drawn from the given point to the required point shall be a minimum; for we thus transform one of the foregoing easy cases into "Alhazen's Problem," whose solution requires the aid of the conic sections, as has

been shewn *algebraically* in the *Philosophical Transactions (Hutton's Abridgment*, vol. viii.), by Huyghens, Slusius, and Catalan; and more recently by an elegant *geometrical process* in the appendix to Dr. Simson's *Sectiones Conicæ*, of which a translation exists in the MS. remains of the late Mr. Colin Campbell.

Maxima and minima cases of problems may also be very frequently detected by examining all the possible variations amongst the data when the problems are constructed for a *given* quantity, and numerous examples of this procedure might be selected from almost any of our mathematical periodicals. If two points and a straight line be given, and it were required to draw two lines from the given points to the given line, so as to form a given angle, the intersection of the line with the segment of a circle capable of containing the given angle, will, in general, determine two points which satisfy the conditions of the problem. When these two points of solution coalesce, the given line becomes a tangent to the circle, and the *maximum* angle is formed at the point of contact. In other instances the *minimum* case is derived with equal facility; but the following example, furnished expressly for this paper by Mr. Henry Buckley, of Wood House, Delph, will render any additional illustrations unnecessary.

Problem.

"Having two points PQ, and a circle (O), given in position and magnitude, it is required to draw a tangent BC to the circle, so that if perpendiculars PB, QC, be demitted upon it from the given points, m.QC + n.PB may be equal to a *given* line, a *maximum*, or a *minimum*.

Construction.

Divide PQ at A (fig. 5). in the ratio of m to n. With centre A and radius AG $= \frac{1}{m+n}$ the given line, describe an arc HI. Draw the common tangent BLGC to touch the arc and the given circle in G and L respectively, and it will be the one required.

Demonstration.

Demit PB and QC perpendicular to LG, and draw QE, AF parallel to BC, meeting AG and BF in E and F. Then m.QC + n.PB = m. GA — m. AE + n. GA + n. PF. But by construction and similar triangles we have m : n : : AP : AQ : : FP : AE. Or, m. AE =

n.FP ; $\therefore$ m.QC + n.PB = m.GA. + n.GA = (m + n) GA = the *given* line as required.

When AG passes through the centre O, as in fig. 6, and the tangent is drawn at the extremity G of the diameter, m.QC + n.PB will evidently be a *maximum*, since, by *Euclid* iii. 8, AG is then the greatest possible.

Similarly the *minimum* case occurs when the contact takes place at G′, for then, *Euclid, ibid*, AG′ is obviously the least possible ; and the problem is evidently impossible when AG, or AG′, neither cuts nor touches the circle (O)."

Q. E. D.

We have thus endeavoured to point out and illustrate a few of the leading characteristics of the ancient geometrical analysis. The subject is undoubtedly an attractive one to all lovers of pure geometry, and might be pursued to much greater length with reference to porisms, poles and polars, radical axes, anharmonic ratio, conjugate division of lines, &c., &c. ; most of which have been treated, more or less extensively, under somewhat different forms by the Lancashire geometers. The writings of Playfair, Wallace, Davies, Mulcahy, and Chasles, may, however, be referred to in default of such an extension, since enough has perhaps been done to direct attention to a branch of science which has held its place in a course of liberal education for upwards of 2,000 years. Its prosecution, beyond the mere *Elements of Euclid*, and a few easy deductions, has for some time been mostly abandoned for the more powerful coordinate methods, and the gigantic strides which both pure and applied mathematics have made in our own times would seem to justify the change.

We may, however, conclude by observing, in the words of Dr. Whewell (*Liberal Education*, pp. 29-30), that " wherever mathematics has formed a part of a liberal education, as a discipline of the reason, geometry has been the branch of mathematics principally employed for this purpose. * * * It is not too much to say that it is a necessary part of a good education. There is no other study by which the reason can be so exactly and vigorously exercised. In learning geometry the student is rendered familiar with the most perfect examples of strict inference ; he is compelled habitually to fix his attention on those conditions on which the cogency of the demonstration depends ; and in the mistakes and imperfect attempts at demonstration made by himself and others, he is presented with examples

of the more natural fallacies, which he sees exposed and corrected. He is accustomed to a chain of deduction in which each link hangs from the preceding, yet without any insecurity in the whole ; to an ascent, beginning from solid ground, in which each step, as soon as it is made, is a foundation for a further ascent, no less solid than the first self evident truths. Hence he learns continuity of attention, coherency of thought, and confidence in the power of human reason to arrive at the truth. These great advantages, resulting from the study of geometry, have justly made it a part of every good system of Liberal Education, from the time of the Greeks to our own."

This extract must form our apology to those who think lightly of mathematics as an exercise for the reasoning powers, for having treated so much at length upon the oldest, yet classical, forms of a favourite science. Pure geometry has ever been a leading feature in the writings of those mathematicians who have resided in the district which the Historic Society peculiarly claims as its own, and hence it may be presumed that a notice of the tendency of their scattered labours cannot be unacceptable in the pages of its transactions.

ON BABYLON;

AND ON THE DISCOVERY OF THE CUNEIFORM CHARACTERS, AND THE MODE OF INTERPRETING THEM.

By Dr. Julius Oppert,

MEMBER OF THE FRENCH SCIENTIFIC EXPEDITION TO BABYLON.

(READ 13TH MARCH, 1856.)

In attempting to convey my sentiments to a Learned Society in England, I must request the members to bear in mind that I express myself in a language that is not my own. I have long known, however, the extent of British hospitality towards strangers, as well during a long residence in the East as afterwards at their domestic hearths. This knowledge dissipates a great deal of the timidity and justified-hesitation with which I should make the attempt; and renders easier the task which I have set to myself, though it is still difficult.

I was appointed by the French Government to be a member of the scientific expedition to Babylonia. Our party was composed of M. Fresnel, the well known Arabic scholar, (who was brother to one of France's worthies, M. Augustine Fresnel,) of M. Thomas, a distinguished architect, eminent at the French Academy of Rome, and of myself. I shall have the honour to lay before you some of the results which we obtained, and afterwards to give some account of the state of cuneiform knowledge. I began the study of this subject in Europe, and afterwards continued it, with better materials and more success, in Babylon itself.

Besides the excavations which we had to undertake, we had been directed to survey the whole theatre of our explorations, and this department was undertaken by me. I spent nearly two years on the site of Babylon; and covered, with a netting of triangles, more than five hundred British square miles. I have been fortunate enough to find, in every instance, the true situation of Babylon corresponding with the territorial necessities; and in conformity also with the hints transmitted to us by the Holy Scriptures, by the Greek authors,—particularly Herodotus, Diodorus, Strabo, and

Curtius,—by the Babylonian Talmud, and by the cuneiform inscriptions, so far as their contents may be considered as satisfactorily known.

By the most simple means, I was successful in discovering the old Chaldean and Assyrian measures of length; and that discovery has been solemnly sanctioned by the illustrious Boekh of the Berlin Academy, who is justly regarded as one of the highest authorities on ancient metrology. Having observed the singular fact that all Babylonian square bricks are of the same size, and also that the whole of the stone slabs present a separate identity of magnitude, I measured 550 bricks and all the stone slabs I could find, with the utmost accuracy. I found that the side of the brick-square was to the side of the stone square, as *three* to *five*. The former being 0.315^{m} in length and the latter 0.525^{m}, the side of the brick-square was obviously the Babylonian foot, and that of the stone square a Babylonian cubit; and by a surprising but not fortuitous coincidence, the latter corresponds exactly with the Egyptian cubit. I found that the Chaldeans had a greater measure of 360 cubits, or 600 feet (*ammatgagari* in the inscriptions); and this greater itinerary length was the stadium of the Chaldeans. It was 189 French metres, 610 English feet, or only 14 feet longer than the Olympic stadium.

Both Nebuchadnezzar and Herodotus assign to the circuit of the walls of Babylon a length of 480 stadia; each side of the square must therefore have been 120 stadia, that is 22,680 metres or 14 miles. My trigonometrical surveys have, in the most satisfactory manner, proved the truth of my reckoning.

The great East India House Inscription of Nebuchadnezzar affords us another confirmation. The destroyer of the Salomonian temple says that his city covered a surface of 4000 *makhargagar*. The *makhar* is a square of 60 Chaldean feet in the side; the *makharyagar* 360 of those unities. The statement of Nebuchadnezzar is thus to be expressed by 5184 millions of square feet, what everybody may verify; and exactly the surface of the great square, the side of which was 72,000 feet.

Babylon filled thus a space of 514 kilometres, or almost 200 square miles. But this huge surface was not all inhabited; in the exterior enclosure, made by Nebuchadnezzar, were contained immense fields, which in the case of siege provided the city with corn and protected her from the horrors of famine. This exterior wall is said to have been destroyed

by Darius, when he took Babylon. But there were, in the inside of that great circumvallation, five other walls, as the most important of the Babylonian writers, Berosus, assures us; and this statement is confirmed by the Babylonian inscriptions. If we call the first, or outer wall, A, the next concentric circumvallation may be termed B. This was a square in the same direction as A, but only of 360 stadia, (ten miles to a side). Concentric with this was a third, C, that enclosed the real city of the Babylonians, situated at the very spot of the town Hillah. This town was built in the eleventh century, when the Euphrates, which since the fifth century of our era had taken another direction, re-entered his old Chaldean bed. It is the custom of the oriental people to settle on ruins; so that most of their cities, and all their *Kubbets* and worship places, occupy the sites of more ancient buildings. The Muhammedan city of Hillah was built from Babylonian materials, and I dare say there is not a single room where a brick might not be seen stamped with the name of Nebuchadnezzar. The new settlers fixed upon the spot of Babylon and no other, for the very reason that materials were ready at hand for new colonists.

The real city of Babylon, C, was of a very limited extent; it was about as large as the part of Paris on the left bank of the Seine. Its boundaries are clearly indicated by old canals, that ran round in the direction of the two outer walls. I believe it to cover a surface of 4½ square miles. Thus the city of Babylon may have had, I fancy, almost 300,000 inhabitants; while the whole population of the great Babylonian metropolis may have amounted to not less than a million.

The interior wall, B, is the second wall of Herodotus, and enclosed the inner city (ἔνδον πόλις), amounting to an extent of 110 English square miles; but besides this proper wall, the area within it contained the most important ruins of Babylon, the royal city, surrounded by a wall, D, of sixty stadia, which exists to the present day in almost its entire length. The reason of its preservation is very simple. Long after the Chaldean empire, the Parthian kings residing at the neighbouring Seleucia, made of the Babylonian palace gardens a hunting ground; they had, therefore, the walls restored to keep the prey properly secured. The other walls disappeared, and for a very simple reason also. The fortifications being built from the earth of the surrounding districts, protected only by a weak brickwork, they fell down into the canals from which they had been taken,

as soon as the bricks were pulled out for the purpose of being used elsewhere.

The whole of the remains of the surrounding walls, however, (A, B, and C,) could not be destroyed; and I have incontestible proofs both of their position and direction, in some Babylonian mounds. In making my surveys I ascertained that a straight line was formed by three hills, in the direction of 10° N.E. and S.W. Their names are, Tell Ghazaleh, Tell Schetiteh, and Tell Zawîyeh, and they are distant from each other about two miles. Far from these I observed a range of hills, in length about six miles, and in the direction of 80° N.W. and S.E. It cuts the former range at a right angle, and the point of intersection is the Tell Zawîyeh, whose name signifies in Arabic, *corner-hill*. This coincidence could not be fortuitous. I saw at once the perpetuation of the historical fact, that the north-west corner of the inner wall B of Babylon had been at this spot. Long afterwards, I found that a range of tumuli, in which the most prominent are named Tell Harkeh and Tell Seid, are just in the direction of 10° N.E. and S.W., and parallel to the western corner-hill range. Having the corner of a square and two opposite sides in position, it was not very difficult, of course, to complete the figure; and, to my great gratification, all subsequent discoveries contributed to corroborate this deduction.

I have now spoken of the walls A, B, and C. It remains to notice the three others. In the north of the Babylonian city, situated between the concentric walls B, C (πολις), was the royal city (βασιλεία), and distinctly separated by Arrian from the former. The wall that surrounded it on both sides of the river is still existing in parts, and agrees most accurately with the notices which are taken of it by Herodotus, Ctesias, and Diodorus. All modern writers,—as Niebuhr, Rich, Ker Porter, and Fraser,—have seen in this the ancient royal city; and they are right. Only Rennell, whose views have, I believe, been adopted by Sir Henry Rawlinson, sees in that part of Babylon the whole town; but his opinion has been already refuted by Rich. Notwithstanding the respect due to these two gallant officers, I am always asking myself how Rennell and my illustrious friend Rawlinson explain the testimony of Herodotus, Ctesias, Berosus, Clitarchus, Diodorus, Strabo, Arrian, Philostratus, Athenaeus, Pliny, Curtius, Plutarch, and other more modern writers; whose remarks are all corro-

borated by the discovery of the inscriptions, and by the most eloquent speaker—the ground itself.

The royal part of Babylon, which is two and a half square miles in extent, contains, from north to south, the following:

(1) The ruin Babel, an ancient temple of the lord of Gods, Merodach; afterwards a fortress, attacked in vain by Demetrius Poliorcetes.

(2) The ruin Kasr, the royal residence of Nebuchadnezzar.

(3) The ruin Amran-Ibn-Ali, the hanging garden of Babylon.

We found in 1853, when the waters of the Euphrates had sunk to a formerly unknown level, a large construction in the water; and we were able to trace its course for about three miles. The inscriptions on the bricks composing that gigantic work clearly proved it to be the quay of Nabonidus, mentioned by Berosus We had, therefore, a new proof that the river in the period of the Chaldeans flowed as it does in our own time, (some fluctuations excepted,) and that it never went out of its bed in the very singular manner that Major Rennell was obliged to suppose, in order to explain a mis-understood passage of Diodorus. Rennell interpreted the passage as if the Sicilian writer had said that the palace was on the western, and the tower of Belus on the eastern side. He took Babel for the latter and the Kasr for the former, and was thus obliged to admit that the Euphrates, in the Chaldean epoch, flowed between these two ruins. This opinion is a mistake; and, moreover, the Greek author did not say so, but stated actually that the palace was on the side of the Euphrates looking towards the west, that is, on the oriental side in Mesopotamia, while the tower was on the opposite side in Arabia.

In the zone between the walls A and B,—viz. the wall of 480, and that of 360 stadia,—were the two other parts of this great town of Babylon. In the N.E. exists a mound which may be seen from a great distance. Its name is Oheimir, and it is situated nine miles from Hillah. Here was one of the cities of Cuta, and I believe the mound in question to be the ruins of the temple of Nergal. Seventeen miles from this place, at the south-west, equally between the walls A and B, and almost in the diagonal of the great Babylonian square, is a much more interesting ruin, well known under the name of the Birs Nimroud.

Fraser and Ainsworth had already proposed the identification of these ruins with the place anciently named Borsippa; we found in 1852 the confirmation of that opinion, in a little clay cake brought from that place, and marked from Borsippa (Borsip). The Talmud believes Borsip to be the scene of the confusion of languages. I explained the meaning of the term "Borsip" a long time ago, as the *tower of languages.* This opinion is confirmed by the cuneiform writing itself; the name Borsippa is often written in an ideographic way, signifying city of the dispersion of tongues.

It is possible, but not at all proved, that this temple was consecrated to the *seven spheres.* This is Sir Henry Rawlinson's view, but I wished to translate the term the *seven lights of the earth god.* The cylinders found there by the learned Sir Henry, speak of other monuments restored by the mighty ruler, who rebuilt the ancient temples of his metropolis after he ascended the throne. It was also sacred to the god Auv, or U, the representative of intelligible light, who had a temple at Borsippa. Nebuchadnezzar says, this god "had the temple of prophecy made in my country;" and hence the story of the tomb of the god Belus. This light god was confounded by the Greeks with the god Belus: but the confusion was the more pardonable as all the gods had the epithet of "bel," or "lord." By all means, then, this temple of Borsippa is the temple of the Bel of Herodotus; and since the recent excavations of Sir Henry Rawlinson, more than ever. But it is not the temple mentioned by the better instructed Arrian, who spoke of the veritable temple consecrated to Belus, in the middle of the city of Hillah.

Borsippa was a suburb of Babylon; but it was a part of Babylon, just as Westminster is of London. King Sargon, in the inscriptions, speaks of his constructions at *Sipar, Nipur, Babylon;* or of the same at *Sipar, Nipur, Babylon,* and *Borsip;* and in the Assyrian inscriptions, at least, Borsippa never appears without Babylon. Nebuchadnezzar mentions the wall with which he surrounded the city of Borsippa, and this passage is to be found between those who speak of the inner and the exterior walls. The latter included, after the time of Nebuchadnezzar only, the formerly independent Borsippa. We see, in one word, the same phenomena,—of extension and absorption of more remote boroughs into the great metropolis,—which we have remarked during several centuries in almost all the capitals of Europe.

But the exterior wall having been destroyed by Darius, the borough of the " tongues-tower " became again separate from Babylon ; and so we find it in Alexander's time, when the Chaldean city had only 360 stadia (40 to 42 miles) of circumference. The destruction of this gigantic circumvallation is the reason of the discrepancy between the Alexandrian writers and the father of history.

I could mention many other ruins, but I shall only speak of a little square mound, the forms of which are so regular, that it is called Mukhattat. It is situated out of Babylon, in a plain, which is named at the present day as it was in the days of Nebuchadnezzar, Dura. If there ever was a golden statue of this king, it was here on this spot; and the mound Mukhattat was its pedestal.

A more detailed account of Babylon, as it was, would be out of place here, however interesting it might be in general, to follow the steps by which, in successive centuries, it became what it is. Only permit me to add, that by a singular predestination, this city of Nebuchadnezzar became, for about a thousand years, a town of the Jews, who founded on the very spot of their exile, their most renowned schools. With the abandonment of the Jews in A.D. 1037 only, the very name of Babylon disappeared, and was replaced by that of the town Hillah; every stone of which attests its glorious origin. Thus fell Babylon, or rather, thus it died. It was deserted, according to the prediction of the Prophets; and when we consider what Babylon was, and what it is, we cannot deliver ourselves from the melancholy question, if a similar destiny should be reserved in time for our great cities. We hope not; and our hope finds its most mighty support in the consideration of a difference which I need hardly specify to a British audience, in the appreciation of European civilization, which on the very spots of Babylon and Nineveh seeks its lessons for humility, and which has revived the language and civilization of the Mesopotamian people, after they had been buried for two thousand years !

In my notice of Babylonian topography, I have several times referred to the cuneiform inscriptions; and you are of course entitled to inquire, whether this most mysterious form of writing is sufficiently known to afford a basis for historical and geographical research. I shall now reply to this question, in exposing, as succinctly as possible, the present state of our knowledge.

Before all else, Science is indebted for the rapid progress which cuneiform knowledge has made in our own time, to those courageous men who devoted themselves to the excavations of ancient Chaldea. After the first discoverer, Botta, it is M. Layard, to whom belongs the merit of having brought from the darkness to light, the most important documents. After him, I must name, of Englishmen, in the first place, M. William Kennett Loftus, whose diggings at Susa, Warka, and Nineveh have cast so great a light over that branch of ancient history. Great treasures were brought up by the efforts of M. Taylor, in Lower Chaldea, and M. Hormuzd Rassam at Nineveh; and I may close the names of excavators by one of the most successful, M. Victor Place, who, walking in the steps of his predecessor Botta, laid bare the great palace of king Sargon, at Khorsabad. These are the men who have furnished the bulk of the material on which the cuneiform scholars may work; and I may be allowed to trace also the names of those to whom Science owes the revelation of the epigraphic mystery of cuneiform knowledge.

The first and the most meritorious discoveries were made by the late Director Grotefend of Hanover; he is regarded as the first decipherer of cuneatic writing. It is unnecessary to enumerate the scholars who prepared the explanation of the Assyrian inscriptions by the previous interpretation of the Persian translations; I will only notice those who began the decipherment of the Assyrio-Chaldean writings. The exposition of the very genius of this figurative expression of human thought will show why the progress was so slow; why every pace forward had to be conquered by continuous and everlasting investigation.

The Assyrian documents would never have shed their light on the primordial history of mankind, they would never have corroborated the facts narrated in the Holy Scriptures, if the old Persian kings, rulers of Asia, had not felt the necessity of promulgating their decrees in three languages. One of these tongues was the old idiom of Xerxes; another, as I believe, that of Scythia; and the third was the language of Nineveh and Babylon. After the discoveries of Botta and Layard, several attempts were made to decipher the Babylonian transcript by the aid of the Persian translation. The first paper of M. Löwenstern on that subject was very insufficient; but those who followed him were more successful. Already in 1847, M. Adrien de Longpérier, now member of the French Institute,

read the first name of an Assyrian King; and in proving the name Khorsabad to be identical with the biblical Sargon, he has the merit of having closed the period of uncertain wavering about the age of Assyrian art. M. de Saulcy followed him in attempting for the first time to give the translation of a whole inscription. This first and courageous essay afforded to science statements which are not only certain but highly interesting.

Soon after, Dr. Hincks published his paper on the Khorsabad inscriptions, and, for the first time, proved the syllabical mode of Assyrian writing. By this discovery, he is evidently the man who has contributed in the largest degree to the decipherment of cuneatic inscriptions. Sir Henry Rawlinson was at first inclined to admit, like M. de Saulcy, the mere alphabetical character of the cuneiform writings; and he was already able to profit by the astonishing discovery of Dr. Hincks, when he published in 1851 the Assyrian text of the Behistun inscription. For this, science is highly indebted to his powerful penetration, his indefatigable courage, and everlasting activity. The document of the work of Behistun, although in a very mutilated state, is the most important clue that destructive time has yet allowed to reach our age.

Sir Henry Rawlinson also found a certain principle, the existence of which, indeed, nobody would have expected. He found that one sign in Assyrian might signify several sounds; and this peculiarity, which he designated by the name "polyphony," was so abnormal and so contrary to the very spirit and end of writing, that many people contested his conclusions, from that seemingly-awkward principle alone. Yet he was right in adopting it, and I looked on this step as an act of scientific desperate resolution. I shall have the honour to give my explanation on this subject, and on this occasion, a glance at the scientific peoples of Asia.

There are only, according to my researches, two classes of cuneiform writing. These I name *arian* writing and *anarian*. The former is alphabetical, and contains only the Medo-Persic mode of writing. The latter is syllabic and ideographic; and the same writing served to express five languages, different each from the other, viz., Assyrio-Chaldean, Armenian, Susian, and two Scythian classes of languages. Our European alphabet, in like manner, serves to express a great many idioms. One of the cuneiform systems is more generally known under the name of the

second class of Persepolitan writing; the second and third are the same, but merely in different styles. M. Norris showed also the identity of forty-five characters, and I have ascertained the same thing in reference to forty-five others, of the so-named Scythic characters.

This writing was at first hieroglyphic; and I have found nearly twenty of the characters derived in form from the very images of the objects which they severally expressed; but as it occurred naturally, the ideographic writing became in part syllabic. Now, five languages use the same syllabic and the same ideographic images. It is clear, for example, that when in the Susian and Assyrian languages the *syllabic* sound *an* is represented by the same sign, the Susians and Assyrians will agree in giving to it the same pronunciation. But while this same character represents also the ideas of *star* and *God*, it is likewise evident that it could not in that case have the same pronunciation in the two countries.

It is evident, on the other hand, that one people must have invented this kind of writing, and have transmitted it to the other. The disciple-nation took not merely the idea inherent in the sign, (as *God*, or *star*,) but also the syllabic value that expressed the idea of the master-people. But that value was not sufficient for the second language to explain the idea, and, therefore, the latter people were forced to adopt a new value for the character. This lingual transmission, by one nation to another, explains the very singular fact of the polyphony.

This variety of sounds, related to a single character, is moreover explained by the hieroglyphic origin of cuneatic writing. An image can only represent a visible object; but how did people express abstract notions? Everybody will answer, with us, by a symbol; thus strength may have been represented by the figure of an arm, royalty by a sceptre, and so on. Thus you will not be astonished that one sign had often several meanings, one concrete and several abstract. We know by M. Layard's documents that actually the ideas of "brother" and of "protecting" were expressed by the same ideographic character. In a similar manner, the notion of "light" represented equally the two verbal ideas of "warming" and "engendering;" that of "town" replaced the verb "to multiply," exactly as the Sanscrit *pura* "town," and *puru* "many," or the Greek πόλις and πολυ derive from the same radical.

Not only the direct notions expressed by the image, but also the derived ones, were transmitted, with their respective sounds, by the first inventors to their disciples.

A highly interesting ethnological inquiry is, What people first invented this kind of writing? Everything goes to prove that it was not the Assyrio-Chaldean people. In a lecture which I delivered some time ago, before the Académie des Inscriptions et Belles Lettres at Paris, I had the honour to prove that it was the people who spoke the language of the second species of Achemenian writing, and that this idiom was a relative to the Scythic of Herodotus. From many facts, indeed, we acquire a conviction that there existed a Tartar civilization in Asia, before the Semitic and Arian conquests. We have not leisure to enter into the discussion of this subject at present; I will, therefore, only lay before you a complete syllabarium of the anarian language, as complete as the present time admits of.

I should, however, be glad to say a few words about the present state of our knowledge on that subject. We understand now many passages of the historical inscriptions, and we may determine the sense of many others; but in almost all cases it is extremely difficult, if not impossible, to prove demonstrably the true meaning. We have not yet arrived at a very high degree of knowledge of the language; and though the decipherment may be considered as almost finished, the great question is the interpretation of the documents, which are truly transcribed and pronounced. Or, we must have the courage to admit our ignorance, and not fear the words γνωθί σεαυτον. We must avoid making illusions to ourselves on that subject; and, in the very interest of science, not wish other people to believe that we know more of these things than we do. It is already a very great thing, it is an enormous fact, that we look into these questions as we do; and this decipherment is really one of the triumphs of modern science. We have, therefore, a right to claim indulgence.

The documents of which I am speaking corroborate the facts of the Bible, and sometimes they contradict them, for the Assyrians, like ourselves, were subject to error. When there is a contradiction, people say that it is an argument against the correctness of the decipherment. When king Yehu is said on the obelisk of the British Museum to have been the son of Omri, you should not attack the man who reads what is written, but the

man who wrote it. It is not we who are mistaken, but the Assyrians who were so in their statements on Jewish matters.

I shall now, in conclusion, give some examples of the inscriptions; and I shall commence with the shortest. M. Loftus found amid the ruins of the palace of Sardanapalus, some images of dogs, and on these dogs were written the names which the Assyrian monarch gave to them. The manner in which I explain the words, confirms, I fancy, both the readings and the explanation. One dog is named *Munashiku garishu*, [he bites those who excite him]; another *Dan rigishshu* [the leader of the pack]; a third *Kashid aibi* [grasping the enemy]; and a fourth *Mushissu shilikat?* [exciting the grey-hounds?]

The proper names on the cylinders have also been explained; out of the mass, I will only mention here the cylinder of a Jew, which is now in Paris. He was named *Abshalum*, and was the slave of a Chaldean; the cylinder is apparently the seal of a Babylonian captive.

I cannot refrain from noticing the extreme difficulty there is in reading the names of Assyrian kings, from their being written in monograms. Nothing is easier, indeed, than to decipher a foreign name in the cuneatic inscriptions; but nothing also, I dare say, is more troublesome than to assimilate an Assyrian king to a monarch known either from the Bible or from the Greek authors. There is a name common to several Nineveh kings composed of three signs which I read *U-likh-khus*, and in which I see with Sir Henry Rawlinson the prototype of the Greek Belochus. This name was borne by the seventh and twelfth descendants of Belitaras, founder of the second dynasty. The latter Belochus is identified with the biblical Pul by my illustrious friend, but I regret to say, that as well chronological as historical reasons forbid me to adopt his views. The Pul of the Bible was an usurper, but the Belochus of monuments, the husband of Queen Semiramis, a very legitimate king. One was Babylonian, the other Ninevite. One was called Pulli, the other Ulikhkhus. I dare say that Dr. Hincks shares completely my chronological views on Sir Henry's system. I even owe to the Irish scholar the cognizance of the most decisive facts on that subject. I may add, that the last pronunciation, *Pulukh*, proposed by the eminent interpreter of the Behistun inscription, is as little satisfactory as the readings adopted by him precedingly, viz.,

Hevenk, Adramelech, and Pallukha. I think, we may without any difficulty prove, that this name cannot be read *Pulukh;* and I feel myself authorized to oppose to the identification of the twelfth descendant of Belitaras with the biblical Pul, the most absolute and the most decisive denegation.

In order to give an idea of the Assyrian style, I shall now produce the translation of some fragments written on the Sargon cylinder, from Khorsabad.

> "Sargon, formerly Belpatisassur, worshipper of the god Ashur, keeping the mysteries of Oannes and Dagon, great king, mighty king, king of legions, king of Assyria, king of the four countries, creature of the great gods, slave of the existent being, to whom Assur and Merodach allowed the empire of nations, recording his name, compelling to war against wickedness. Who made the Mole of Sippara, Nipur, and Babylon, favourable to their inhabitants, obedient to their wisdom; fuller of the clothes* of the Phalgi.....forcing to contribution the tribes of Israel, transporting their population.....Who from the commencement of his reign spared not the kings his enemies, who never saw rest from battle and fight, who crushed like *hesbet*† the lands and their rulers; the four cardinal points were arrosed with blood. The fields and the castle in their subjection I took them. I saw their destruction. I the king who ruled from Ras under the dominion of Elymais, Bucud, Daman, Hisrigalzi, the town of Rapik, the land of Amutsabi(?), to the boundaries of Egypt, Aharri [Phenicia] the mother of the Hittites. From the land of Khashmar to the town of Simaspatti in the remote Media, at the rising of the sun; from Scythia, Albania, Bit Ham Can, Parthia, Van, Ararat [Armenia], Colchis, Tubal, to the Moschi reached the power of his arm; he constituted over them magistrates, and other people, and imposed on them tributes like to the Assyrians: the just, the strong, who transported Israel into knighthood, who vanquished Humbanigas, king of Elam and the Namruma..... who attacked the house of Omri with force, who defeated Egypt at the town of Raphe;

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* A talmudical expression for King. It is quoted in the talmud and explained by "King."

† The blue face-paint.

Hanan king of Gaza, his ally, he brought to Assyria; attacking the Tamudeans, Ibadid, Warsimani, Hayapa.....cheating the sense of the house of Omri, captain of the vessels which crossed like fishes the sea of Ionia with courage, transplanting the land of Kui and Tyrus.....who tried Bit, Burutash the king of whom Ambarissi doubted of the power of Sargon, they trusted to Armenia and the Moschi; they were humiliated entirely;—who punished Mita king of the Moschi, and who took with him the spoils of the land of Kui.....who declared war to Armenia, plundered the city Mussasir that Ursaha king of Armenia, in his great deference in the service of his superiors..... .....sweeping away Andia, Zikartu, the people of whom I slew entirely; in the lands of my enemies rushed the terror of death.....I have taken the land of Media without tax, I have taken the people of Kharkhar, I have enlarged the empire of Assyria."

The king continues then in the enumeration of some other reduced nations, and speaks afterwards of the building which he erected in the tower of Hisri Sargon, which he named after his name, and which is the modern Khorsabad. I omit those most difficult passages. I shall only speak of the doors which he built, because here the actual excavations confirm our reading and translations.

"I made, in the direction of the four cardinal points, eight great doors.* The god Shamash [the Sun] lets me take my possession; the god U creates my.....the great door of the god Shamash and the god U, I named thus the door on the side of the East. Belus-Dagon found the reservoirs of my city, Taouth prepares in her bosom the stone of painting [fucus]. The great door of the South I consecrated to the god Belus-Dagon, and the goddess Taouth. The god Anu who finishes works of my land, the goddess Istar [the Moon] inflames its inhabitants. The great door on the side of the West I made to the god Anu and the goddess Istar. The god Nisroch directs the marriages of men, the goddess Belitilüi [Mylitta] prospers the births of men, I named on the North, the great door of Nisroch and of Mylitta. The god Assur gives victory to the standard of the kings who adore him (lit. "who make him"); he protects the army of their fortress. The god Ninip sets..... for long days give him the victory."

* The cylinders say *eight*, the Bull inscriptions *four*.

After this, the inscription concludes as follows :—

> "The gods who inhabit heaven and earth and this city, have blessed all; they listened favourably to me while I invoked them, in building the town and in performing the holy rites. But he who infests the works of my hand, who defaces my pictures, who mingles the earthern jars of my treasury, who tears my clothes, that the gods Ashur, Shamash, and U, and the gods inhabiting his heart, may sweep away from this country his name and his family, and may calamities put him into the knighthood of his enemy."

It is only right to mention that of sixty-seven lines I have been able to translate but thirty-one. The remaining thirty-six are still a mystery to me, although I perceive their general sense.

I will now conclude with a short Babylonian inscription, remarkable because King Nebuchadnezzar is boasting to have "confounded the new lie," and we may easily infer what is the meaning. The destroyer of the temple of Jerusalem, blinded by his successes, styles himself 'the King who cannot be compared to any other,' and we may explain that by the words of the Prophet,* who warns the people that the promises of escape from the King of Babylon were all untrue. Here is the inscription :—

> "Nebuchadnezzar, King of Babylon, great, majestic, builder of Bitsaggata and Bitzida,‡ son of Nabopolassar, King of Babylon. I, I say,—Nabopolassar my father commenced the great walls of Babylon.....I dug out the trenches, and elevated highly its towers in bitumen and bricks. The god Merodach, great lord, strengthen my arm; we have confounded the *new lie;* accept graciously my prayer thou god; to this realm grant succession for remote days."

The interest which attaches to questions of this kind is steadily increasing, and this, I trust, will be a sufficient apology for entering into it as I have now done. And permit me also to add, that if these archæological studies are not of immediate practical utility, they are at least contributing to the

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* "Therefore, hearken not ye to your prophets, nor to your diviners, nor to your dreamers, nor to your enchanters, nor to your sorcerers, which speak unto you, saying, 'Ye shall not serve the King of Babylon,'—for they prophecy *a lie* unto you."—Jerem. xxvii. 9, 10.

‡ Two Scythic words explained in the syllabaria.

great work of civilization. I shall not speak here of scanty historical facts, such as lists of kings formerly unknown, and of whom we still know nothing more than the names; but of the general lessons given to our century by the entire revelation of such powerful civilizations as were those of Babylon and Nineveh. And if these scientific studies only served to show the exactness of the historical facts contained in the Holy Scriptures, would they not be of great importance? The present age, therefore, may not refuse to cast a glance back on its less privileged predecessors, which illustrate more clearly than we knew before, the primeval period of mankind.

ON THE METHOD OF TESTING MARINE METEOROLOGICAL INSTRUMENTS, RECENTLY INTRODUCED AT THE LIVERPOOL OBSERVATORY.

By John Hartnup, Esq., F.R.A.S.

(Read 17th April, 1856.)

It will probably be remembered that in the year 1853 a conference of maritime nations was held at Brussels, on the subject of meteorology at sea. The report of this conference was laid before Parliament, and the result was a vote of money for the purchase of instruments and the discussion of observations, under the superintendence of the Board of Trade. Captain Fitz-Roy, of the Royal Navy, an officer well known for his zeal and great practical experience in these matters, was appointed to superintend this new department of marine meteorology. Arrangements were made, in accordance with the views of the Royal Society and the British Association for the Advancement of Science, for the supply of instruments properly tested. A committee called the Kew Committee was appointed for this purpose, and the Kew Observatory was at first fixed on as the sole place for testing these instruments. Arrangements were, however, subsequently made for testing barometers and thermometers at the Liverpool Observatory; and it is a brief description of these arrangements, together with a few examples, the results of our experiments during the past few months, that I venture to hope may not be found uninteresting to the Scientific Section of the Historic Society.

In the barometers now in general use by meteorologists, the diameters of the tubes are nearly equal throughout their whole length, and a provision is made for adjusting the mercury in the cistern to the zero point, previous to reading the height of the top of the column. The object of the latter arrangement, it is well known, is to avoid the necessity of applying a correction to the readings for the difference of capacity between the cistern

and the tube. At sea, barometers of this construction cannot be used. The tube of the marine barometer must be very much contracted to prevent the "pumping," and the motion of the ship would render it impracticable to adjust the mercury in the cistern to the zero point. In the barometer usually employed on shore, the index error is the same throughout the whole range of scale readings, if the instrument be properly made. In nearly all the barometers which have till recently been employed at sea, the index correction varies throughout the whole range of scale readings, in proportion to the difference of capacity between the cistern and the tube. To find the index correction for the first-named barometer, a comparison with a standard at any part of the scale at which the mercury may chance to be standing, is generally considered sufficient. To test the marine barometer is a work of much greater labour, since it is necessary to find the correction for scale readings for every half-inch or so throughout the range of atmospheric pressure to which it may be exposed, and it becomes necessary for us to have recourse to artificial means of changing the pressure of the atmosphere on the surface of the mercury in the cistern of the barometer. The first successful attempt to do this was, so far as I am aware, made at the Kew Observatory by Mr. Welsh. In December, 1854, I saw the apparatus for accomplishing this object, in operation at the observatory above named; and the apparatus which we now have at the Liverpool Observatory is of a similar description, with such improvements as were suggested by Mr. Welsh, from his experience at the Kew Observatory.

The barometers intended to be tested, together with a standard, are placed in an air-tight chamber, to which an air pump is applied, so that by partially exhausting the air, the standard can be made to read much lower than the lowest pressure to which marine barometers are likely to be exposed; and by compressing the air it can be made to read higher than the mercury ever stands at the level of the sea. The tube of the standard is contracted in a similar way to that of the marine barometer, but a provision is made for adjusting the mercury in its cistern to the zero point. Glass windows are inserted in the upper part of the air chamber, through which the scales of the barometers may be seen; but as the verniers cannot be moved in the usual way from outside the chamber, a provision is made for reading the height of the mercury independent of the verniers attached

to the scales of the respective barometers. At a distance of some five or six feet from the air-tight chamber a vertical scale is fixed. The divisions on this scale correspond exactly with those on the tube of the standard barometer. A vernier and telescope are made to slide on the scale by means of a rack and pinion. The telescope is armed with two horizontal wires, one fixed, and the other moveable by a micrometer screw, so that the difference between the height of the column of mercury and the nearest division on the scale of the standard, and also of all the other barometers placed by the side of it for comparison, can be measured either with the vertical scale and vernier or the micrometer wire. We therefore possess the means of testing barometers for index error in any part of the scale, through the whole range of atmospheric pressure to which they are likely to be exposed, and our usual practice is to test them at every half-inch from 27·5 to 31 inches.

Upwards of seventy barometers of various descriptions have already been tested in this way at the Liverpool Observatory, and the errors are often found to be so large that, independent of the necessity for finding the corrections in order that the readings of different instruments may be compared with each other, the advantage is of no small importance to captains, as we meet with some barometers which read half an inch and upwards too high, and others which read as much too low. In some cases those which are correct in one part of the scale are from half an inch to an inch wrong in other parts.

It is a very common fault, in the construction of the marine barometer now in general use, that the cistern is not large enough to hold the mercury which descends from the tube in a low atmospheric pressure. We have met with some in which the mercury would not descend lower than about 29 inches, from the above-named cause; and it must be evident to any one, that such barometers are calculated rather to mislead than to assist the judgment of the mariner.

The practice which has for so long been adopted of mounting the marine barometer in wood is very objectionable; and the instrument recently introduced agreeably to the recommendation of the Kew Committee, is greatly superior to any other description of marine barometer which we have tested, as regards the accuracy with which it indicates the pressure of

the atmosphere. A description of this barometer is given in the Report of the Kew Committee to the British Association for the Advancement of Science, by Mr. P. Adie, the maker of the instrument. The barometer now exhibited is one of Mr. Adie's, with the various improvements which have been effected since its first introduction. The diameter of the cistern is about an inch and a quarter, and that of the tube about a quarter of an inch. The scale, instead of being divided into inches in the usual way, is shortened in the proportion of about 0·04 of an inch for every inch. The object of shortening the scale is to save the trouble of applying the correction for difference of capacity between the cistern and the tube. The perfection with which this is done may be judged of from the fact that of the first twelve barometers tested at the Liverpool Observatory with the new apparatus, the index corrections in the two pressures of 28 and 31 inches in three of them were the same; two differed 0·001 of an inch, and for the remainder the differences ranged from 0·002 to 0·006 of an inch. The correction for capacity may therefore be considered sensibly perfect; and there can be no doubt whatever of the practicability of correcting for capacity the standard barometers ordinarily used on land in the same way, and thereby doing away with the necessity of adjusting the mercury in the cistern to the zero point before each reading. The twelve barometers above alluded to were first tested at the Kew Observatory, and then forwarded to the Liverpool Observatory by the railway. At Liverpool they were tested again, in order to see if any change had taken place from the shake of the railway carriages in a journey of upwards of 200 miles. In six of the twelve barometers the index errors were found to be the same at Liverpool as had been given at Kew. Three differed 0·001, two differed 0·002, and one differed 0·005 of an inch. I think it will be admitted that this is a degree of perfection highly creditable to Mr. Adie, the maker of the new marine barometer.

In order to stop the pumping of the mercury at sea, the tubes of these barometers are so contracted, that when first suspended, the mercury is about twenty minutes in falling from the top of the tube to its proper level. When used on shore, this contraction of the tube causes the marine barometer to be always a little behind an ordinary barometer, the tube of which is not contracted. The amount varies according to the rate at which the mercury is rising or falling, and I have found it to range from 0·00 to

0·02 of an inch. At sea it is thought that the motion of the ship causes the mercury to pass so much more rapidly through the contracted tube, that the readings will be sensibly the same as they would be if the tube was not contracted. For stationary purposes, the tube need not be contracted, and this barometer will then be found to be a very perfect instrument. I saw one at the Kew Observatory nearly two years ago, which was made by Mr. Adie; and I have been informed that M. Leverrier has recently adopted this method of construction for the barometers used at telegraph stations in France. The getting rid of the trouble of adjusting the mercury in the cistern to the zero point previous to each reading, and the very moderate price for which this barometer has been made, are recommendations so strong that they will probably soon lead to its general adoption.

The method of testing thermometers is so simple as scarcely to require an explanation. For the freezing point, the bulbs, and a considerable portion of the tubes of the thermometers, are immersed in pounded ice. For the higher temperatures, the thermometers are placed in a cylindrical glass vessel containing water of the required heat, and the scales of the thermometers intended to be tested, together with the standard with which they are to be compared, are read through the glass. In this way the scale readings may be tested at any required degree of temperature, and our usual practice is to test them at every ten degrees from 32° to 92° of Fahrenheit. For this range of 60° the makers who supply the Board of Trade are limited to 0·6 of a degree as the maximum error of scale reading; and so accurately are these thermometers made, that it has not been found necessary to reject more than a very few of them. This is a proof of the practicability of making cheap thermometers, adapted for all the requirements of the mariner, nearly as perfect as it is possible to read them.

With some opticians it is not unusual, when captains break their thermometers, to apply new tubes to the old scales; and we occasionally meet with thermometers which require corrections of four or five degrees and upwards, with contrary signs at the two extremes of temperature in which we test them. It can scarcely be supposed that the captain of any ship would trouble himself to take observations with such a thermometer if he knew its indications to be so erroneous; and we hope that the means now

afforded to the mariner to test his instruments, will soon lead to an improvement in their construction.

I do not know anything which is more likely to lead to a great improvement in navigation, than the encouragement which is now given by the Board of Trade to the intelligent mariner to keep, in a systematic manner, a record of the various meteorological and astronomical phenomena observed at sea. The captain who avails himself of every opportunity to ascertain the position of his ship and the error of his compass by astronomical observations, and who keeps his meteorological record in such a way as to enable him to trace those changes by which he is warned of the approach of an iceberg, or of a coming storm, must, on the average, conduct his ship from port to port quicker and in greater safety than he would do were he to neglect such observations.

ON THE CHARACTER OF HAMLET.

By the Rev. Arthur Ramsay, M.A.

(READ 10TH APRIL, 1856.)

Of all the wonderful creations of our many-sided national dramatist, none has provoked greater discussion, or occupied the attention of more learned men, than the play of Hamlet. Goethe, Coleridge, Tieck, and Schlegel—the two first, themselves poets of the very highest order—have brought kindred genius and rare talent to the examination and criticism of this inimitable production. And still we feel that the character of Hamlet is in many points yet a mystery; that the lights and shades which an enlightened criticism may throw upon it, the latent beauties of delineation which a reverential study may detect, and the different phases which a keen and far-sighted research may bring into view, are absolutely inexhaustible. The reality of Hamlet's madness, the genuineness of his love for Ophelia, his course of conduct toward the queen his mother, and the king his uncle, the curious combination of indecision of purpose in his resolutions, with a certain promptitude of action in his deeds when necessitated to act on the spur of the moment; all these, and much else in this play, are points about which the readers of Shakspere have ever formed, and will ever form, various and conflicting opinions, and entertain a difference of idea, extending even to the notions which they form when speculating on the personal appearance of the hero.

This uncertainty of motive, and apparent fickleness of design, by no means confined to the character of Hamlet, tend to thicken the atmosphere of mystery which envelopes the whole play. In mystery it begins and in mystery it ends. The mystery of humanity in the character of Hamlet, the mystery of existence speculated upon in so many of his speeches, the mystery of the world of spirits, the mystery of death, and the mystery of destiny, are all brought before us. And this mystery it is which attracts us so strangely towards this play, just as we are excited and attracted by the mysterious and the inscrutable in a character of real life.

The supremacy of chance, and the uncertainty of human plans and

actions, reign relentless throughout the whole play, and pervade every part of it; until, in a spirit of the most sublime irony, the poet causes the final catastrophe to result from an accident, in spite of all the counsels and determinations of the several actors, setting forth to us the great truth that

> "Our wills and fates do so contrary run,
> That our devices still are overthrown."

I have already adverted to the criticisms of our great poet-philosopher Coleridge. Of these critical hints (unfortunately they are nothing more) I have largely availed myself; and I must here express my agreement with the opinion of that prince of critics, that the character of Hamlet owes itself to Shakspere's deep and accurate acquaintance with the science of mental philosophy. Those, doubtless, who have been accustomed to hear Shakspere spoken of as a mere "irregular genius," or to think of him as described by Milton—

> "*Fancy's* child,
> Warbling his native wood notes wild,"

may be astonished to hear him spoken of as a great moral and mental philosopher. Medical and other writers have indeed borne testimony to his accurate observation of the *external* world; but we are less inclined to think of him as equally a deep and correct observer of the *inward* world. He was, however, so to speak, subjective as well as objective; and thus moral and metaphysical truths, of the very deepest importance, abound in his pages.* True he might not, perhaps, have an external knowledge of other men's *systems* gathered from the study of their works; but he was a philosopher for all that. His was essentially a philosophic mind—a mind which could *pass out of itself*; and there is a great difference between having an external knowledge of philosophy, and being *inwardly* a philosopher. Likely enough Shakspere had never read Plato; but still he was in many points an admirable Platonist: like Plato he was a philosopher of Ideas; like Plato's, his philosophy was the "interpreting of appearances," the wish to be everywhere at home, the undressing of the soul; his pre-eminent excellence was that he could lay aside self, transplant himself into the minds of his fellow men, and be perfectly at home

* The distinction between Reason and Understanding, (so constantly forgotten by writers of the last century, and of late years revived by Coleridge,) is constantly found in Shakspere. In this very play he distinguishes between the *capability* of the *discursive* faculty, the "large *discourse*, looking before and after," and the *power* of the *intuitive* faculty, or "*god-like reason*;" the former being merely concerned about *conceptions*, the latter about *ideas*.

there, laying bare their very souls, and not only seeing, but expressing their thoughts in language, every word of which is itself a thought and a picture. He could pass out of his own into their position; originate, think, and express the thoughts and reflections natural to them in that position. Shakspere, in fact, differed from other men, principally in having more *humanity* than they had. He had, as it were, a family likeness to every other man, and thus he deserves the epithet of *myrionous*,* the "myriad-minded one," which Coleridge has transferred to him; and the title of "the many-sided," which Carlyle has applied to Goethe, might, with much more truth and fitness, be attached to the name of Shakspere. But Shakspere was not only an observer of other men's characters, he was a close and deep observer of the law of his own mind; and it is to this habit of deep self-observation that we owe the character of Hamlet. Coleridge has truly remarked that one of Shakspere's modes of creating character is to conceive any one intellectual faculty in a morbid excess, and then mentally to place himself with the same tendencies in the same position. And this he has done in his creation of Hamlet. In Hamlet he has embodied his idea of one in whom the Reason predominates in an inordinate and unhealthy degree over the Will, or acting principle; and this character he has placed in a situation of overwhelming exigencies—a situation in which promptitude, decision, and self-reliance, are absolutely indispensable. It is not, however, the incapability of action which Shakspere portrays in Hamlet, for when the latter does act, he acts with energy, decision, skill, and success—ever equal to the call of the moment. But in him the abstract intellect is too strong for the active impulse. Ever theorizing and generalizing on the things and circumstances around him, looking into, dissecting, and anatomizing his own thoughts, and pursuing, so to speak, the somewhat unprofitable luxury of "thinking upon thinking," he remodels and renews his resolutions, and the more he does so, the longer he defers the execution of those resolutions, until, in the anguish of doubt and indecision, he breaks out into the passionate exclamation,

"O what a rogue and peasant slave am I."

And yet how far is Shakspere's Hamlet from exciting in us any of those feelings of pity and contempt with which we usually regard the indecisive and inactive. On the contrary we cannot but agree with Ophelia's

* See Coleridge, "Biographia Literaria," vol. ii., page 18.

beautiful but melancholy eulogium of him. His is indeed a "noble mind"; he is a prince with the feeling of the good and the beautiful, dignified by the consciousness of high birth; he is a gentleman, pleasing, pliant, and courteous;* he is a man of genius, and as such he possesses that craving after the unseen, the indefinite, and the unknown, which most easily besets men of genius, and that aversion to action which constantly prevails among such as have a world in themselves. But Hamlet is not only a prince, a scholar, and a gentleman—he is more than this; he is a philosopher—not one indeed of the very highest class, but still a philosopher—accustomed to raise his mind from the things of sense around him, to the grand ideas *within* him and *above* him; one who "could be bounded in a nut shell, and count himself king of infinite space"; so unworldly that to him

> "Weary, stale, flat, and unprofitable,
> Seem all the uses of this world;"

ever (and herein he is most of all a philosopher †) contemplating and reflecting on the law of his own mind, seeing "into the *life* of things," constantly generalizing, till even when making a resolution

> "To wipe away all trivial fond records,"

he sets down "on his tables" a general observation; and thus his

> "Native hue of resolution
> Is sicklied o'er with the pale cast of thought,"

and in spite of all his reasoning, all his plans and purposes, the consummation takes place just the same as it would have done without these. Into the Philosophy of Hamlet we have not now time to enquire; it only needs a careful examination, however, to perceive that this is quite as wonderful as his character.

In contradistinction to the glorious *imagination* and mysteriously deep philosophy of Hamlet, stands the sober common sense of Horatio, by its very contrast giving greater prominence to, and heightening the effect of the character of Hamlet. Horatio was peculiarly a healthy-minded man. If Hamlet's mind was cast in the Platonic mould, Horatio was eminently an Aristotelian, or rather, perhaps, as he says of himself,

> "More an antique Roman than a Dane."

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* In the scene with Osric, (Act v. Sc. 2,) Hamlet's gentlemanly manners, as well as the superior grandeur of his philosophy, shine conspicuous, the lofty condescension of his conscious superiority, and his good natured playfulness forming a fine contrast to Horatio's impatient and almost pettish remarks to that courtier.

† Novalis says well on this point, "Die Philosophie ist eine ideale-selbster-fundere methode das innere zu beobachten."

His philosophy, such as it is, begins and ends in *doubt*. Its materialistic and sensualistic character is brought forward in the very first scene of the play, where he calls that mysterious appearance, which at the midnight hour is occupying the thoughts and attention of the officers on the platform, "this thing"; and says of it, "tush, tush, 't will not appear." In fact the coldness and the oppressive stillness of the night—"not a mouse stirring"—the glimpses of the moon above, the time-worn towers behind, the hollow murmur of the sea beneath, the mixed feeling of awe and alarm in the officers on the watch, and the strongly contrasted contempt of Horatio for the supernatural, are the most remarkable points in this opening scene, so artistically introduced, and so well fitted to prepare us for the appearance of the ghost of Hamlet's father, and the mysterious character of the whole play. Marcellus remarks of him,

> "Horatio says, 't is but our fantasy;
> And *will not let belief take hold of him*,
> Touching this dreaded sight twice seen of us;"

and he himself afterwards says,

> "I might not this believe
> Without the *sensible* and true avouch
> Of *mine own eyes*."

And when this unbelief of his has proved to be foolishness, he is full of the philosophy of the schools, and sets to work to resolve the phenomenon into an historical prodigy,

> "A mote it is to trouble the mind's eye."

In the midst of his theorizing the ghost re-enters, when he fancies it must either be an illusion, or else have flesh and blood;

> "Stay *illusion!*
> If thou hast any sound, or use of voice,
> Speak to me:"

and when it answers not, he is for assuring himself, by means of his hands, of the reality of the prodigy, bidding Marcellus stop it, and strike at it, not seeing that he does it,

> "Wrong being so majestical,
> To offer it the show of violence."

That which is beyond the comprehension of the sensuous Understanding, Horatio is for rejecting as "wondrous strange," so that Hamlet takes occasion to tell him,

> "There are more things in heaven and earth, Horatio,
> Than are dreamt of in *your* philosophy."

The contrast between the imaginative spirit of Hamlet and the practical

understanding of Horatio, runs through the whole play. For imagination to revel in philosophizing on the littleness to which all the sensible greatness of man may be reduced, and to trace "to what base uses we may return," Horatio thinks "were to consider too curiously." Some of Hamlet's sublime speculations he reduces to

"Custom hath made it in him a property of easiness;"

others he takes no interest in, merely answering with "It might, my lord," "Ay, my lord." In the church-yard he obviously dislikes the whole scene by which he is surrounded. To Hamlet's question "Is not parchment made of sheep-skins," he replies, with the most technical gravity, "Ay, my lord, and of calves-skins too." This question he can resolve, but it is plain that Hamlet's beautiful address to the skull of Yorick makes little or no impression on his mind. And yet, though in Horatio the Understanding does predominate over the Reason, still it has not wholly extinguished the latter. Nay, it would seem that his sensualistic philosophy was in a great measure learnt in the schools, and was, perhaps, rather the *external result* of his education, than the *internal law* of his own mind; as it is, every now and then he gives utterance to a note-worthy truth, of a nature not to be expected from him. We may also observe that Bernardo's opening salutation to him,

"Welcome, Horatio; welcome, good Marcellus,"

shew him to have been held in some degree of respect; and most true to nature (as when is he not?) is Shakspere, when he makes Hamlet love, value, and respect Horatio, ever appealing to his judgment, as one of the

"blessed are those
Whose blood and judgment are so well comingled,
That they are not a pipe for fortune's finger
To sound what stop she pleases."

The more in keeping with real life is it that Hamlet should thus lean on his friend, since that friend is so different from himself; his fine, imaginative, metaphysical, but unpractical spirit naturally clings to the strong, coarse, but sober and practical understanding of Horatio. Many points, too, they have in common: Hamlet is a "noble heart," a good lover, ready to wear his friend "In my heart's core, yea, in my heart of hearts;" "Most generous and free from all contriving," he "will not" "peruse the foils," ready to acknowledge ungrudgingly and openly, as he does in the case of Laertes,

"I have done you wrong."

Horatio, too, is a good friend, honest, and sincere, as well as sensible and

judicious, and moreover, like Hamlet, a scholar and a gentleman.

A great deal lower than these two comes Polonius. Some critics (Tieck among the number) have pronounced Polonius to be Shakspere's representation of an able and experienced statesman; others, on the contrary, suppose him to be one in whom the body has outlived the mind, or perhaps, to speak more accurately, the memory has outlived the reason. And in this latter view there is doubtless a considerable degree of truth. The sentiments to which Polonius gives utterance are, indeed, but the rags and shreds of his former wisdom: still even from these we may judge what was the tone of thought and feeling of his better days. From these we may well conceive Polonius to be, in part, Shakspere's anticipative embodiment of the petty philosopher of a later age. He is a philosopher of the Understanding, and of the Understanding only. If Hamlet be a Platonist, and Horatio an Aristotelian, then Polonius is (of course I speak anticipatively) a disciple of Locke; his wisdom, such as it is, is founded wholly on "observation and experience"; he is "full of wise saws and modern instances"; he is one of those whom Coleridge* has well described as being like "a Cyclops, with one eye only, and that in the back of his head." Polonius is a maxim-monger, and the universal character of his maxims is selfishness—selfishness and a mere seeming knowledge of the *outward* part of the world—a knowledge of the superficies of man, acquired by worldly experience, combined with a total ignorance of all that lies beneath this surface, of every thing good, noble, and beautiful. Thus his precepts are exactly those of Lord Chesterfield and of Rochefoucault;† characterised by a morbid distrust of his fellow-men, arising from that incredulity which is, after all, but credulity, saying 'No' instead of 'Yes,' and nodding from behind instead of from before, and is generally allied to extreme credulousness of aught which helps forward the favourite theory. These traits, as wells as an enlightened selfishness in the reasons on which he founds his maxims, run through his precepts, all of which relate to mere external matters.‡ Their author is one of those who begins from

* See Coleridge, "Table Talk," page 37.

† To many of Polonius' precepts, such as "Take each man's censure, but reserve thy judgment," "Neither a borrower nor a lender be," "Give thy thoughts no tongue," we may find exact parallels in Rochefoucault's "Maxims."

‡ We must make one exception, namely, that noble piece of advice which closes the address to Laertes,

"To thine own self be true;
And it must follow, as the night the day,
Thou canst not then be false to any man."

without, but never proceeds inward; his soul is a slave to the outward, and he knows not that "he who would ascend upward must retire inward." Polonius, moreover, is one of those modern philosophers who believe in the omnipotence of accomplishments, and thus sends his son, at an early age, into loose and exciting society, to become initiated in those dissipations which a certain class of moralists, or rather anti-moralists, have asserted to be a natural preparative for entering upon an active life—a kind of mud bath into which the youth is, as it were, necessitated to plung before he is privileged to put on the toga of manhood; and he not only sends his son abroad to shew

> "How much a fool that has been sent to roam
> Excels a fool that has been kept at home,"

but he institutes a notable system of espionage over him, and even instructs his servant to speak of him as a "perfect gentleman," a dashing young fellow, an adept in swearing, gaming, drinking, and every species of vice at all tolerated by society, vices which that servant himself considers to imply dishonour. Mark, too, his metaphors, all taken from money-matters, his words with nothing in them, his circuitous craftiness, his inflated self-importance, his ignorance of his own ignorance, and of everything at all above himself, his positiveness, and his repeated assertions that all opinions but his own are *ipse dixitisms;* his perpetual and ill-timed boastings of his own superior acuteness and knowledge of the world,

> "As I perceived it, I must tell you that,
> Before my daughter told me."

> "Hath there been such a time, (I'd fain know that,)
> That I have positively said, 'T is so,'
> When it proved otherwise.

Besides these there are several other noticeable points in the character of Polonius: his suspicious disposition; his fondness for petty intrigue, without which he can do nothing, and with which he goes blundering on, until he is killed in a closet intrigue at last; the *arrangement* of *talent* in his speeches, as contradistinguished from the *method* of *genius** which (as Coleridge has well shewn in the concluding Essays of the "Friend") uniformly pervades every speech of Hamlet.

While Horatio commands *respect* and esteem even from one so differently constituted as Hamlet, the old expediency statesman almost moves the latter to

> "That scorn which wisdom holds unlawful ever."

* Compare Coleridge's "Friend," vol. iii. Essay iv. p. 113, and Essay i. p. 71, with Novalis' remarks, "In der *Methode*, der Regularisation des Genius."

Polonius, on the other hand, with admirable self-complacency—Polonius, the philosopher of maxims—consoles himself with the notion that Hamlet, the philosopher of ideas, is mad. Shakspere thus agrees with Cervantes in making the philosopher of the *Pure Reason* misunderstood, or rather not understood at all, by the man of the Understanding. Sancho Panza can no more appreciate or understand Don Quixote's motives and character, than Polonius can Hamlet's.* One proof that this view of the character of Polonius is in the main correct, we have in the fact that his maxims, disjointed from the character itself, are so often quoted with approbation, as the veritable wisdom which Shakspere was commissioned to preach to his fellow-men, as if Shakspere had been a mere precept menti-facturer, teaching no higher philosophy than the way to be "healthy, wealthy, and wise," and to pass through the world with some five or six "golden rules," suitable to all occasions, and sufficient for all purposes.

We must next examine the result of Polonius' teaching, and see what he to whom his maxims were given, and who endeavoured to practise them, really was. Laertes became what his father wished and intended him to be, a finished gentleman, a perfect man of the world; in the poet's own words—

> "An absolute gentleman, full of most excellent differences,
> of very soft society, and great showing: indeed, to speak
> feelingly of him, he is the card or calendar of *gentry*."

While Hamlet is at once ready to forgive and forget, nay, to make the first advance towards reconciliation, with

> "I am very sorry, good Horatio,
> That to Laertes I forgot myself,"

Laertes stands on minute points of honour, and

> "Will no reconcilement,
> 'Till by some elder masters of known honour
> I have a voice and precedent of peace."

Bishop Warburton and others speak of Laertes as a "good character." What these gentlemen's notions of 'goodness' were they have not explained; unless they were peculiarly eccentric, it is somewhat difficult to conceive that they could have read the play with sufficient attention to

* Of course I do not mean to institute any comparison between the character of Don Quixote and that of Hamlet, further than that in each the Imagination has grown in such an undue proportion as to overbalance all the other mental faculties. Hamlet is an example of a fine Reason and a weak Will; Don Quixote of a fine Reason and a strong Will, but in consequence of a deficiency of the Understanding, or substantiative power, the Will almost always obeys the Reason wrongly; both are wanting in sense—the conservative power, so to speak—in the intellectual republic.

observe, that before the fatal encounter between Hamlet and himself, while the unsuspicious Hamlet presumes at once

" These foils have all a length,"

Laertes not only arranges beforehand, in compliance with the king's suggestion, to have an " unbated sword," but of himself proposes to steep the point of that weapon in a deadly poison ;

" *For the purpose* I 'll anoint my sword,"

is his own proposal.

Thus, then, in this one play we have three grand species of the philosophic character* most ably and minutely drawn, " sounded from the lowest note to the top of the compass," and there is " much music, excellent voice," in the Memnon-like frame of at least one of these. It does not lie in our way minutely to examine the other characters of the play, less directly contrasted to that of Hamlet ; but we may observe much that is beautiful and wonderful in most of them—the gentle and unselfish Ophelia ; the admirable delineation of the fawning courtiers Rosencrantz and Guildenstern, and the marvellous judgment with which, as Goethe† has well remarked, Shakspere has introduced two of these ; the grand struggle between the Reason and the Will in the king's attempt to pray ; his dignity in the scene with Laertes ;‡ and above all, the sublime moral which teaches us how weak are all our purposes and resolves, how futile our plans and designs, how uncertain our hopes and objects ; how all these must yield, and become as nothing, before that superior and mysterious power which works its will in spite of our impotent struggles ;

" There is a Divinity that shapes our ends,
Rough-hew them how we will." " *That is most certain.*"

Before I close, it may be as well to say a few words about two obscure and much disputed points, (1) the real or pretended madness of Hamlet, and (2) his love for and treatment of Ophelia. And the two we shall find

* In Hamlet we have genius, with its allies reason, imagination, and humour : in Horatio, talent, accompanied by understanding and sense : in Polonius mere cleverness, with the talent of adapting and retailing, though not of originating, ideas.

† " What these two persons are and do it is impossible to represent by one. In such small matters we discover Shakspere's greatness. These soft approaches, this smirking and bowing, this assenting, wheedling, flattering, this whisking agility, this wagging of the tail, this allness and emptiness, this ineptitude and insipidity—how can they be expressed by a single man ? There ought to be at least a dozen of these people, if they could be had, for it is only in society that they are anything ; they are society itself : and Shakspere showed no little wisdom and discernment in bringing in a pair of them." *Goethe's ' Wilhelm Meister.'*

‡ We may compare (parva componere magnis) the dignity of Charles Edward in the closing scenes of " Redgauntlet."

are, in a great measure, connected. First, with regard to his madness. We have already seen that in Hamlet's mental constitution there is an undue predominance of the imaginative and reasoning powers. This original fault of nature is aggravated by the circumstances in which he is placed. By the awful apparition of his father's ghost, and by the discovery of his mother's guilt, his belief in the stability of the moral world is unhinged; his mind has, so to speak, got a twist, and lost whatever healthiness it might before have had. This and the half earnestness in Hamlet's character in part account for his half assumed madness. Like many another man, Hamlet partially assumes that state to which he is nearest,* and pretends to act when he is very near being what he acts. In a spirit of bitter irony, he in some degree countenances the idea of his own madness, although when about to address himself to an earnest and difficult task, he offers to expose himself to a test, which modern physicians have affirmed to be correct:

> "Bring me to the test,
> And I the matter will reword, which madness
> Would gambol from.

The late Sir Henry Halford, † in an interesting essay on tests of insanity, gives some curious instances and illustrations of the correctness of the proposed test. Perhaps, on the whole, while among persons by whom he was so little understood, Hamlet's feeling may have been something like that of Brothers, the prophet, who, when visited in Bedlam by a friend, and asked how he came to be there, replied—"the world and I had a slight difference of opinion; the world thought I was mad, and I thought the world was mad; the world *outvoted* me, and here I am."

With regard to Hamlet's love for Ophelia, we may observe that, except her artlessness and innocence, there was little in Ophelia to make her the engrossing object of passion to so majestic a spirit as Hamlet's. His love is doubtless sincere, but it is not an absorbing passion; ‡ and thus the moment his soul is sickened by the awful glance which he has obtained

* Insanity, i e. unhealthiness, is perhaps a better term to apply to Hamlet's mental derangement than madness.

† See Sir Henry Halford's Essay on "Popular and Classical Illustrations of Insanity," "Essays and Orations," p. 55.

‡ I am aware that this view of the matter is combated in "The Characteristics of Women," by Mrs. Jameson, who maintains that Hamlet uniformily regards Ophelia with all that deep delight, with which a superior nature ever contemplates the goodness which is perfect in itself, yet unconscious of itself,—that Ophelia knew that Hamlet loved her, and Hamlet knew that Ophelia knew it, and when uttering his bitter words, was well aware that no behaviour of his could make Ophelia doubt his love.

into the depths of female hollowness and iniquity, love falls into the back ground, and is at once ranked among those "trivial fond records" which he has sworn to erase from his heart and brain, and when he perceives that Ophelia is being used as a decoy, and is acting a part not her own, he can address her in that wild ironic bitterness of tone, which excites our wonder and astonishment.

Much of what has been said may appear somewhat extravagant and far fetched, especially to those who have been taught to look upon Shakspere as a mere beautiful "lusus naturæ"—a wild and extravagant genius, deficient in learning and culture, who neither meant nor understood a tithe of the deep and beautiful ideas which critics fancy that they can discover in his wondrous soul-creations. When studied as he ought to be studied, in a humble and loving spirit, Shakspere can only appear such to ordinary and infra-ordinary minds. And as for his not meaning all the beautiful things that are to be found in his words, it is one of the surest marks of a true poet that the outpourings of his genius contain many hidden beauties, variously unfolding themselves to different orders of character; the greater the poet, the more living and expansive are his words, and the more truths they contain for the larger number of men of every variety of age, and every mould of mind,—truths always rising up like the waters of a spring, ever fresh and ever inexhaustible. Thus the words of a true poet, like Shakspere, will rarely, if ever, be comprehended in their full significance, by any one single individual.

But apart from this, somewhat of the mystery in the play of Hamlet may arise from the circumstance, that in common with the highest painters and sculptors,* even Shakspeare has not wholly expressed his idea. Like the Gothic architecture, his works must remain in a great measure ideal, pointing even higher than they reach, since any one of his dramas, taken in its *oneness* and *entirety*, conveys to the mind far more than lies on the surface of the mere words themselves.

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* Compare Thorwaldsen's remark: "My genius is decaying. Till now my idea has always been far beyond what I could execute. But it is no longer so. I shall never have a great idea again." Quoted by Hare, "Guesses at Truth," first series, p. 83.

ON THE ROMAN REMAINS RECENTLY DISCOVERED AT WALTON-LE-DALE, NEAR PRESTON.

By Charles Hardwick, Esq.

(Read 3rd April, 1856.)

Notwithstanding the destructive influence of time, of agricultural improvement, and of wars engendered by personal cupidity, "domestic treason or foreign malice," remains of several Roman roads and stations may yet be traced in various parts of Britain. As may be anticipated, however, from the imperfect character of the few ancient records which have descended to us, considerable difference of opinion has been expressed by antiquaries respecting the identity of existing localities with those of the Roman topography.

In this respect Lancashire appears to be rather more unfortunate than many other portions of the island of Britain. The venerable Camden expresses a fear that he would "give little satisfaction either to himself or his readers" when he enters upon the consideration of the archæological remains relating to this county. Although much has been discovered and written since his time, the subject still remains enveloped in considerable obscurity; the most eminent modern antiquaries by no means agreeing even in the general outline. Every new disclosure of remains indicating Roman occupation must therefore be regarded as an event of considerable interest. I take the present opportunity of acknowledging my obligations to this Society during my recent investigation of the site of the Roman station at Walton-le-dale; not merely for the valuable information contained in the published volumes, but also for the confidence and enthusiasm which the example of several of its members induced, and without which, perhaps, the first indications might have been passed over as relatively unimportant.

The Roman remains at Walton were brought to light, like many others, by fortuitous circumstances. During the past year I have been occupied in collecting materials for a "History of Preston and the neighbourhood."

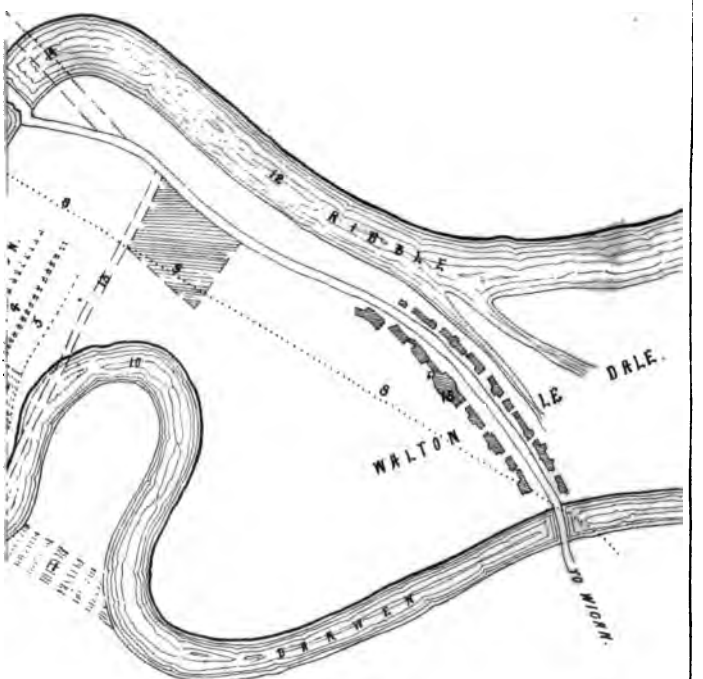
I was aware of the existence of a tradition which identified a mound planted with trees, and known by the name of the "Plump," with the burial ground of "Scotch warriors" slain in Cromwell's victory over the Duke of Hamilton, in 1648. I therefore visited the spot several times in June last, for the purpose of examining its structure, and ascertaining whether or not existing remains countenanced the tradition. Some workmen, employed by the highway surveyor, had commenced digging for stones and gravel. This fortunately afforded an excellent opportunity for a minute inspection. The labourers, being resident in the neighbourhood, had heard of the tradition, and fully expected to meet with some memorials of the battle. During the absence of the excavators, I picked up a piece of metal, which had evidently formed part of some manufactured article. It seemed too thin to be a fragment of a skull-cap, or a piece of plate armour. It however distinctly presented an indentation from the blow of a pointed instrument, and there were some dark red stains upon it. The metal itself appears to be a mixture of tin and lead. This served to stimulate me to further investigation. Three brass coins were next found by the workmen, two of which were illegible from corrosion; but the other was obviously Roman. This coin has since been pronounced to be a first brass of Domitian. The labourers thought it a "Scotch penny," from the imperfect figure on the reverse bearing some resemblance to a kilted Highlander. Thus whilst searching for remains of the Commonwealth period, proofs of Roman occupation were disclosed.

Remembering the injunction of Mr. Robson,* I immediately instituted a stricter search. Specimens of Roman pottery were soon found in abundance, when the attention of the workmen had been directed to its peculiar character and importance. A large quantity of earthenware, and other remains, were taken from their place of deposit by myself and several friends to whom I communicated the discovery. During *this* exploration, an area of nearly one hundred superficial yards was excavated to a depth of about three feet. In the original soil (or "sea sludge," as the labourers termed it,) a foundation wall, about eight yards long, eighteen inches broad, and nearly a foot in depth, was discovered. It is formed of irregularly shaped, but perfectly adjusted fragments of the red-sandstone rock of the neighbourhood, which, from having been buried so long in the earth, has

* Transactions of the Historic Society, vol. iii. p. 75.

become partially disintegrated. The Romans first taught the British people the use of mortar; and as no mortar or other cement had been employed in the construction of this foundation wall, the presumption is that it was the work of the original inhabitants. Above this was spread a layer of large boulders, mixed with *glareæ*, or gravel, in and upon the surface of which the Roman remains were discovered. This stratum was about a foot in thickness, and, from the first, was pronounced by the workmen, who were accustomed to dig for road materials, to be of artificial construction. The fact that the red rock foundation wall was discovered *below* the stones and gravel, confirms their opinion. The boulders only extending to a certain distance, the excavators relinquished their labour, and filled up the cavity, or doubtless many other relics of interest might have been discovered, as the mound extends considerably further to the east and north of the site of the excavation. Two, or even three distinct terraces may still be perceived descending towards the Ribble, notwithstanding the garden cultivation to which a great portion of the land has been subjected for some years past. This peculiar formation, Mr. Robson informed me, resembles much the station at Caer-rhun, about five miles beyond Conway. I afterwards discovered, by digging a small hole at the western extremity of the mound, beneath the trees, that the Roman remains extended fifteen yards further in that direction than the original excavation. Mr. Martland, of the Bridge Inn, Walton-le-dale, the tenant of the adjoining land, had previously exposed a large quantity of bright red clay fragments of pottery, &c., considerably to the eastward of the "Plump," but not being aware of their archæological importance, the prettier portions were given to his children, and the remainder re-consigned to the earth. I have, myself, picked up Roman pottery at the eastern extremity of this garden. Thus the extent of the station *already discovered*, from east to west, is about one hundred yards.

Beneath the trees in the "Plump," the vegetable soil and alluvial deposit had accumulated to nearly the depth of two feet above the Roman remains. In the adjoining garden, the gravel and stones are nearer the surface. Many of the latter have been removed during the past and some preceding winters. This portion being the most elevated land in the neighbourhood, has been rarely covered by even the highest floods, and, consequently, but little river *debris* is found upon what I call the third terrace. It is not so,



REFERENCE.

WHICH THE ROMAN REMAINS WERE FOUND.

B'S GARDEN, IN WHICH REMAINS WERE FOUND.

TERRACES.

INDENTATION

EL BED AND FORD

OMAN ROAD

SERVING SHED, IN WHICH THE WORKMEN FOUND REMAINS OF ROAD

THE DARWEN, ACCORDING TO ROBERT PORTER'S MAP, PUBLISD IN 1738

SE OF THE DARWEN.

F WALTON-LE-DALE.

S ARE FROM ROBERT PORTER'S MAP.

LINES INDICATE SUCH MODERN ADDITIONS AS ARE NECESSARY

NT INQUIRY.

INES INDICATE THE ROMAN REMAINS.

however, with the two lower ones. Here the periodical deposits have formed a considerable depth of very superior soil. Stepping across these terraces from south to north, I found the highest and middle plateau to be each about thirty yards in breadth, and the lowest from fifty to sixty, making the extent of the entire station about one hundred and twenty yards. The terraces are elevated from two to three feet above each other. From the western extremity to what appears to have been the main highway from the south to the ford over the Ribble, the distance is about three hundred yards.

Amongst the remains discovered are four brass coins, besides the one already mentioned, viz., a "second brass," with the head and name of Domitian distinctly legible, and a "first brass," in moderate preservation, which presents the effigy of Antoninus Pius. The others are too much corroded to be clearly deciphered. It is probable, however, from the general form of the head, that one is a Titus Vespasian. Amongst the metallic substances are a small piece of copper, some fragments of thin sheet lead, one shewing indication of fusion like solder, two fragments of Roman pewter vessels, and several large iron nails. (Plate A, fig, 5.) These last are much encrusted with gravel and sand, from the oxidizing of the metal, and the lead is covered with a thick white coating, from a similar cause. A small bronze *fibula*, or toga button (as the fastening is in the centre), bearing marks of elegant and elaborate chasing, and some remains of purple enamel, was likewise picked up. (Figs. 2 and 4, plate A.) Another *fibula*, of totally different form and character, has since been found by Mr. Martland's son, together with a small rod or bar of iron plated with silver. The latter is about three inches and a half long, and one-tenth of an inch in diameter. The *fibula* is of fine brass, ornamented in the centre with a circular figure in bright red enamel, resembling the stone setting of a modern finger ring. (Plate A, figs. 6 and 7.)

Amongst the stone articles are a large portion of an "ass," or lower stone of a quern, or hand corn mill (plate A, fig. 8); several fragments of "riders," or upper quern stones, cut from rock resembling blue lava (plate A, fig. 1), and some remains of circular stones of a similar character, supposed to have been potter's wheels. One small wheel, or spindle head, about an inch and a half in diameter, formed of very fine bluish stone,

exhibits upon its side marks of friction, apparently produced by rapid revolution. (Plate A, fig. 3.)

The fragments of earthenware are extremely numerous, and appear to have been formed from five or six distinct clays or composition pastes. Some of the pieces of " Roman red lustrous ware " exhibit elegant and well executed figures in relief. Many of the ornamental designs of these fragments are identical with those on specimens figured in the catalogue of the Museum of Practical Geology, found at Roman stations in Britain and on the Continent. (Plate B.) A *relievo* of the Venus de Medici is precisely similar to those upon the beautiful vase, represented at page 62 of the catalogue referred to.

A single fragment presents a good specimen of a peculiar species of earthenware, often discovered in Germany and Britain, in which lines of dots and figures in relief have been added, after the body of the vase had been formed and turned in the lathe. This specimen is unglazed. (Plate C, fig. 1.)

There are many fragments of amphoræ and lesser vessels, of a great variety of form and material. Two necks of vases with single handles, in common red clay, resemble those found at Stockton Heath, and figured at page 33, vol. ii., of the Historic Society's Transactions. (Figs. 2 and 4, plate C.) One large amphora handle exhibits the potter's stamp. From superficial decay, all the letters are not very legible; but it appears to resemble either **PVCRM** or **FVCRN.** (Plate C, fig. 3.) This vase handle has been much injured since I made the drawing. There is an immense number of fragments of a coarse black or bluish ware, of various shapes and sizes. Many have formed low shallow dishes, such as fig. 5, plate C, and appear to have been used for cooking purposes.

Considerable lumps of fine red clay, kneaded into a paste, were likewise met with, as well as a few fragments of Roman tiles and bricks. It is therefore very possible that a brick-kiln, or an establishment for the manufacture of the coarser kinds of pottery, existed at Walton.

Amongst other miscellaneous objects, I took from the surface of the Roman gravel two portions of a horse's jaw. One consisted of the entire half of the lower maxillary bone, but it was in such a decomposed condition, that it broke into fragments on removal. The teeth, however, are quite perfect. The core of a horn of one of the extinct species of oxen, the

PLATE A

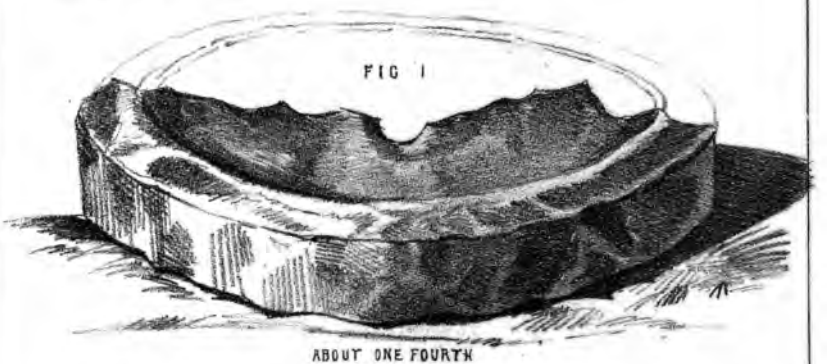


FIG 1

ABOUT ONE FOURTH

FIG 4.

FIG 3.

FIG 2.

NEARLY FULL

FIG 5.

ABOUT ONE HALF

FIG 6.

NEARLY FULL

FIG 7.

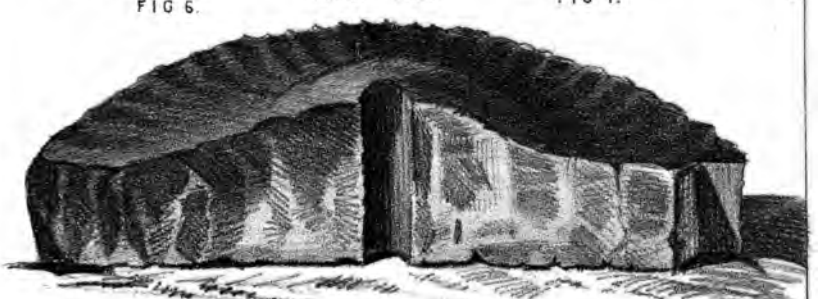


FIG 8.

ABOUT ONE FOURTH

REMAINS FOUND AT WALTON-LE-DALE

Bos longifrons, was likewise found amongst the Roman remains, together with a few bones. Similar horns have been dredged out of the Ribble, as well as skulls and bones of the huge *Bos primigenius* and other extinct animals. The Rev. Mr. Thornber possesses a skull of the *Bos longifrons* which was found in the Roman station at Kirkham. One of the garden labourers states that he came upon some burnt ashes, covered by a vessel of rude pottery, but it was not preserved. I have since learned that other remains supposed to be Roman or British, including bronze celts, spear heads, &c., had been previously found in the neighbourhood.*

The trees on the "Plump" have been cut down during the past winter, and I understand that some of the workmen employed have procured a few more coins.

Notwithstanding the accumulation of alluvial deposit, a broad agger is still traceable from the immense natural gravel bank or ford at the Ribble, towards the present bridge over the Darwen. The workmen employed in the erection of Mr. Calvert's weaving shed, which crosses its line, state that at some distance below the surface, they came upon a compact mass of road material, so hard that a pick-axe could scarcely penetrate it. Near Brownedge Chapel, a little further south, there appears still to exist a large fragment of the Roman highway, now used as a private road, but marked on the ordnance map as "Mainway-gate." On the north bank of the Ribble, opposite the ford, a zigzag indentation in the face of the steep ascent may still be seen. From this point, the road appears to have passed in a straight line over the end of Church Street, near the House of Correction, to Preston Moor. As usual, in the immediate neighbourhood of the town, all remains are lost. The cutting where it passed the Swillbrook, between Mr. Eastham's new mill and Albyn Bank, is, however, distinctly visible. During the construction of the Freehold Park estate in Fulwood, fragments were discovered upon the section allotted to Mr. Brewer. A small portion of the Roman agger may yet be seen on Preston Moor, where the land slopes towards the brook, opposite to Mr. Brewer's plot. This road intersected the one from the "Portus" to Ribchester (the seventh iter of Richard), on the present "Watling-street," at about an equal distance from the "Withy Trees Inn," and Fulwood Barracks. The Rev. John Clay,

* Nearly the entire remains yet found are in the possession of myself and Mr. Alderman Brown, who zealously aided me in the prosecution of my investigations. We purpose presenting the principal objects to a Museum in Preston.

in one of his interesting lectures on the Ribble, in 1845, gave some particulars respecting the destruction of these roads, which are the more valuable, and the more worthy of preservation, as the progress of modern improvement has nearly obliterated all traces of them. He observed :—

"In the course of our enquiries about the roads, we were fortunate in meeting a fine old man, upwards of ninety years of age, named Richard Dewhurst, living on Cadley-moor, in a cottage in which he, and his father before him, were born. His memory respecting this road seemed very clear. He recollected 'breaking up'—seventy years ago—the gravel of which it was formed, beginning from the Withy Trees, crossing Cadley-moor, and continuing past Mr. Grimshaw's house, in the direction of Cottam Mill. There can be no doubt that this was a portion of the Watling-street; for the old man's memory brings it to Tanteston Hall, where its traces re-appear. Mr. Cartwright and I found faint evidences of it yet remaining near Plungington, and also near the lodge of water belonging to Cadley Mill. Our informant also well remembered that another road, constructed also of similar materials, crossed Preston-moor, and entered the Watling-street. On this road his fellow-workmen, employed in removing the gravel, found some Roman coins. The tradition which had come down to our venerable informant was that these roads stretched across the whole country. The 'one reaching from east sea to west sea; the other from north sea to south sea!' And as to the maker of the roads, tradition further declared that they were all made in one night, by the author of evil!"

I have, myself, heard, from good authority, that another old man, named Thomas Myerscough, who died last year, when upwards of ninety years of age, frequently stated that in his youth he had assisted to cart away the gravel from off Watling-street.

Dr. Kuerden, in his quaint way, describes these roads as they appeared nearly two hundred years ago. The learned doctor laboured hard to prove that Preston occupied the site of the Rigodunum of Ptolemy. He makes Ribchester the Coccium of Antoninus, and Lancaster the Longovicus of the Notitia. Speaking of the road from the coast to Ribchester, he says:—

"This highway, by the country people at this day cald Watling-street, & was well vewed by the learned and incomparable antiquary, William Dugdell, Norroy King of Armes, in his last visitation of the Gentry within

the county of Lancaster, An. Do. 1664, where by him and many other diligent observers there finding a rampire cast up with gravel, & the largeness of the bulk thereof, was judged to be a Roman strata. Besides, it was observed that from this Ribodunum (Preston) to the other Roman garrison, the Longovicus, or Caer werid of the Britons, their Green Citty (Lancaster) there was another lesser strata leading betwixt them, as diuers signes of a like rampire ouer Preston and Fulwood, more towards Garstang by Broughton, are yet conspicuous to the observations of many learned men as well as vulgar people."

Dr. Kuerden likewise mentions that not many years previous to his recording the circumstance, a "Roman Vrne in which was found great store of antient coynes," was dug up in Myerscough Park, near the line of the Roman road. The doctor states that he had himself seen most of these coins which were originally in the possession of "that ingenious gentleman, Edward Townley, Esq., the proprietor and owner of the park of ground where this urne was found."

Some of the elder antiquaries were of opinion that the great Roman road from the south to the north crossed the Ribble by the ford at Penwortham, and passed between Tulketh Hall and the Maudlands. This was first conjectured by Percival, and immediately ridiculed by the Rev. John Whitaker. Yet, with characteristic daring, he afterwards mentions the circumstance as probable, when it did not affect his favourite theory. The notion was followed by Edward Baines and others. The absence of discovered remains at Penwortham and Tulketh, and the presence of them at Walton and elsewhere, now clearly demonstrate the upper ford to be the one where the great road crossed the Ribble. The pretensions of the "square area" at Maudlands (lately destroyed) to Roman construction have been fully exploded.* It was, doubtless, an outpost in connection with the works erected by Col. Rosworm, the celebrated German engineer, after the capture of Preston by the parliamentary forces under Major-Gen. Seaton, on the 9th of February, 1643. † The town was re-captured, by the

* It contained a brick chamber, about six feet deep, and sufficiently broad to permit the descent of one of the workmen. This is supposed to have been constructed for a powder magazine. Some rude oaken staves were found in the ditch. These appeared to have formed part of a railing or palisade. The discovery in the mound of fragments of clay smoking pipes demonstrated its relatively modern construction.

† See Rosworm's pamphlet in "Civil War Tracts," published by the Chetham Society.

PLATE 6.

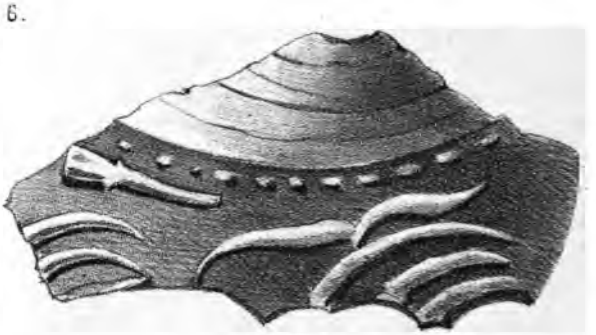


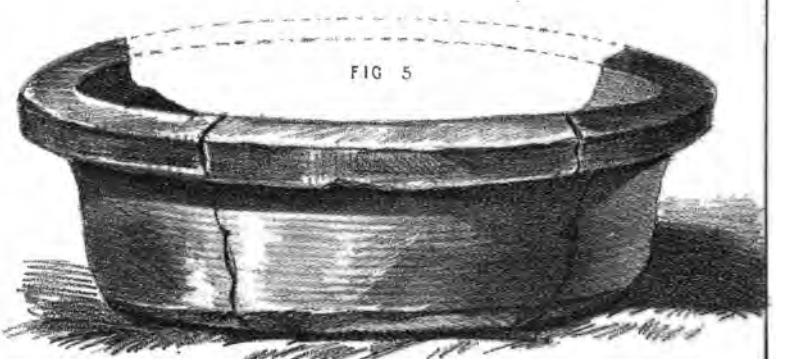
FIG 1
NEARLY FULL

FIG 4.
ONE HALF

FIG 3

FIG 2
ONE HALF

FIG 5



NEARLY ONE HALF

ROMAN POTTERY FOUND AT WALTON-LE-DALE

Earl of Derby, on the 21st of the following month, and the defences destroyed. Baines confounds Maudlands with Tulketh, aud hence the blunder. West, the author of the "*Antiquities of Furness*," speaks, in 1774, of what he fancied to have been a Roman outpost; but his mound and ditch were situated at the head of the high promontory at Ashton, to the "SOUTH WEST OF TULKETH HALL."* A few months ago this mound was levelled; I examined it several times, but discovered no Roman remains. The ditch was evidently, to some extent, an artificial work. The locality may have been used by the Romans, or some of their successors, as an outpost, as it commands a magnificent prospect of the entire estuary, and a considerable portion of the valley to the eastward. Beneath the roots of the grass on the outside of the ditch, fragments of building materials were visible, probably the remains of the ruins described by West as existing in his day, and which had been occupied by the monks under Evanus, during the erection of Furness Abbey. The Domesday record testifies to a Saxon castle on the opposite headland at Penwortham. The site is termed "Castle Hill" to this day.

The discovery of a station at Walton is an event of great importance with reference to the determination of the route of the 10th iter of Antoninus. The recent discoveries in South Lancashire and Cheshire had shaken the hypothesis of the two Whitakers and others, that the iter traversed the county by Manchester and Ribchester. It only required proofs of Roman occupation near Preston to confirm the theory propounded by Mr. Robson, that it passed through Warrington and Lancaster. These are now found. Had the station been situated on the north instead of the south side of Preston, as Mr. Robson anticipated, the result would have been perfectly satisfactory, and the figures of Antoninus have required no emendation.† I may further add, that travelling in a direct line from Lancaster, by Cartmel, to near the head of Windermere Lake, where a Roman

* The "Maudlands" is to the east of Tulketh Hall. On the ordnance map, the site of the temporary "monastry" is marked nearer to the present Tulketh Hall than the mound alluded to. Both are now totally erased.

† Mr. Robson expected the remains of a *post* station, at least, might be found near the crossing of the Roman roads on Fulwood Moor. This is about two miles to the north of Walton, and agrees with the figures in the iter. This circumstance, together with the belief that Ribchester had been a seaport during the period of the Roman occupation, may, perhaps, account for the indifference with which the mound at Walton, situated amongst the alluvial soil of the valley, has hitherto been regarded by local antiquarians.

would naturally be more used than the upper, and hence the reason why it has found a record in the Itinerary.*

The elder Whitaker regarded Coccium as the capital of the Setantian territory. True, the "City of Supremacy" of a tribe of Ancient Britons would present but a poor figure in comparison with even a modern village. If there be any value in this interpretation it can only apply to the settlement of the Aborigines, and not to that of the Romans. Chester appears to have been the most important military station with them in this district, and Ribchester perhaps the next. The low mound at Walton, situated near the junction of the rivers Ribble and Darwen, is a locality very likely to have been selected for a stronghold by the original inhabitants, and its central position amongst the Setantian people is in favour of John Whitaker's supposition. When the surrounding country was clothed with primæval forest, it must have presented the very model of a fastness to the eyes of a people who dwelt for security amongst morasses and dense woods. The broad stream of the Ribble forms a natural fosse on the north and east, whilst the lesser, though not insignificant, Darwen, encloses the site on the west, and partially on the south. The lower lands in the neigbourhood of the rivers, would, at the period referred to, doubtless be sufficiently swampy to accord with the most fastidious Ancient Briton's taste with respect to fortification. A glance at Robert Porter's map, published in 1738, will show that the locality formerly presented even more attractions of this character than at present. The Darwen, in its course from near the site of Walton Hall, towards its junction with the Ribble, made a deep indentation eastward. This formed an additional double moat, and defended the mound on the south. The present straight course of the Darwen is artificial. The remains of the old channel may yet be distinctly seen. The centre of the curve reaches nearly to the weaving shed lately erected by Mr. Calvert. The situation likewise commands the old ford, or "pass of the Ribble." (See Map.) The Roman invaders often selected the sites

* By this route the following places would correspond with the southern portion of the 10th iter of Antonine:—Mediolanum, Middlewich; Condate, Stockton Heath, near Warrington; Mancocunium, Standish; Coccium, Walton, near Preston; and Bremetonacis, Lancaster. This, of course, implies, as suggested by Mr. Robson, that the Mancocunium, with its variation Mancunium of the tenth iter is a distinct place from the Mamucium, or Manutium of the second, the crossing of the two being at Condate.

of the British towns or encampments for their stations, and the discovery of the foundation wall, already alluded to, strengthens the probability that Agricola in this instance merely retained possession of a fortress previously occupied by the discomfited native inhabitants.

Camden placed Coccium at Cockey, on account of the similitude of the names. I have made some enquiry as to existence of any local terms* which may have been corrupted from words indicative of the presence of Roman people at Walton, but have not been very successful. This at best is dangerous ground to tread upon.

Walton-*le-dale* is the present title of the village, the valley being named Cuerdale. The Roman station is only about a mile distant from the spot where the immense Saxon and Danish treasure was found a few years ago. May not Cuerdale be a corruption of Caer-dale? The only relic of any portion of the word Coccium that I have yet met with is more humorous, I fear, than demonstrative of the existence of a remnant of the Roman appellation. However, it is worth notice, and may, perhaps, suggest something. Dr. Kuerden, in his description of Preston, nearly a couple of centuries ago, says, "There is, likewise, below the Churchgate barrs another public footway southward, leading towards the bridge over Rible into London-road; and this passage at its entrance out of town was called Cocker-hole." If we by this are to understand that the road led to Cocker Hall, it would exactly identify Walton with the word Cocker. This footway most probably traversed a portion of the Roman road. On leaving the town it was joined by a track of a similar character, which is thus described by Kuerden:—"Another *remarkable* foot passage toward Rible Bridge is through the churchyard southward, by the publiq schoole and antient place called Chappel of Avenam, over the Swilbrook southward, by west field to the aforesaid Bridge of Rible; and this passage is called the *Stoney gate*, being the greatest foot tract to the Burrough of Preston."

The discovery at Walton throws valuable light upon the much canvassed probability of Ribchester having been a "*sea*port," during the Roman occupation of Britain. The affirmative chiefly rested upon a vague

* Mr. Sibson, describing the road from Warrington to Lancaster, says, "it is probable there has been a fortified camp" at Walton, "to protect the pass of the Ribble." He adds, that Walton is Val-tun, or fortified town. The Rev. John Whitaker says Gual is the British word for rampart, and it forms into *Vall*, *Val*, *Bal*, and *Ual* or *Al*."

tradition, and a conjecture of the ever daring elder Whitaker, endorsed by the historian of Whalley. The latter learned antiquarian afterwards discovered that this position was not tenable, and honorably acknowledged it. Mr. Edward Baines, however, in 1836, published a singular paragraph on this subject, from which we might infer that, in his opinion, Ribchester had been a seaport in the time of the Roman domination. He says:—"It must be acknowledged that *Preston was not a Roman station*; but that when, by the gradual recession of the waters, or by that mighty convulsion of nature which threw up the huge mass of Pendle, and deranged the whole system of plants and minerals in the vale of the Ribble, to a great extent Ribchester sunk into decay, Preston rose upon its ruins and became the principal port of Lancashire." He further adds, in a note:—"No Roman remains have been found here" (Preston) "while at York, Lancaster, Ribchester, and Manchester, they abound."

Some antiquaries appear to expect that all remains ought to "come into court" at their bidding, or, thenceforth "hold their peace," in order that their theories may be freed from the disagreeable necessity of being reconciled with facts subsequently discovered. It would, however, have been very remarkable indeed, if such remains could have survived the mighty convulsion alluded to. In comparison with the time of the heaving up of the "huge mass of Pendle," the Roman occupation of England is but a thing of yesterday, as the merest tyro in Geology at the present day will easily understand. Mr. Baines afterwards altered his opinion and contended that the presence of the red rock in the bed of the river disproved the assumption of the elder Whitaker. The Rev. John Clay, however, in his lectures on the Ribble, strongly maintained that Ribchester had been a seaport, and that the bed of the river had been elevated by an earthquake, since the period of the Roman occupation.

The discovery of the remains in the centre of the alluvial deposit between the Ribble and the Darwen, opposite the ford over the former, furnishes better evidence of the condition of the valley with regard to tidal action, than a thousand speculations, however ingenious. The circumstance that the red rock crops out at an angle, and that the immense depth of debris in the valley is stratified horizontally, is satisfactory proof that the latter has been deposited *since* the elevation of the former, at whatever period that event occurred. The discovery at Walton may be said fairly to set

this question at rest; for if the tide had, at the time alluded to, risen six feet higher, or, what would amount to precisely the same thing, had the valley of the Ribble been depressed but six feet, the station could not have existed. Indeed, it must have required *then*, as *now*, to be well embanked, to protect it from the ravages of the winter floods, providing the river current and the tidal flow were no greater than at the present time. In all human probability the valley of the Ribble presents nearly the same general features as when the Roman legions left the country. Its superficial aspect may have changed; the alluvial deposits may have increased; the river channel may have become "sanded up," or diverted; marshy swamps may have been converted into solid earth; the dense oak forests which once crowned its banks, may have fallen before the axe of civilization; but no *proof* has yet been advanced that its *great* outlines have changed since the day when the painted Setantian warriors succumbed to Roman discipline and Roman valour, and resigned their stronghold in the midst of the swamps of Walton, to the soldiers of the victorious Agricola.

ON THE ETHNOLOGY OF SOUTH BRITAIN AT THE PERIOD OF THE EXTINCTION OF THE ROMAN GOVERNMENT IN THE ISLAND.

By Thomas Wright, Esq., M.A., F.S.A., &c.

(READ 1ST MAY, 1856.)

In a paper read at the meeting of the British Association in this town in 1854, I endeavoured to show the error of the popular notion that there was anything like uniformity of race in the population of this island when it was first visited by the Roman arms, and the more than probability that it contained Teutonic as well as Celtic blood. Of the ultimate fate of this population we are left in great uncertainty, arising not only from the deficiency of direct information on the subject, but from the different applications of the name Britons in subsequent times, when it was usually applied to the Roman population of the island, but sometimes, when given to a people independent of the Roman power, to the Caledonians of the north, who alone continued in a state of hostility to the conquerors. I am not aware that in any instance in the later Roman historians the name of Britons is applied to the remains of the peoples who inhabited our island in the time of Cæsar, and I confess that I have serious doubts if there existed any representatives of the ancient Britons to whom that name could have been applied, unless it were the servile class which was attached to the soil, and which held no place in the political history of the country, except by occasional and partial insurrections into which they were driven by oppression or by the hope of plunder. Under the government of Agricola, as we learn from Tacitus, a policy of comparative gentleness and conciliation was adopted towards the Britons, but this appears to have been abandoned under his successors, and we have every reason to believe that the older population of the island was afterwards treated with an oppressive severity, the effect of which during four centuries may easily be imagined. Among the numerous Roman inscriptions which have been found of a date subsequent to the first century, commemorative of individuals, we never find the name of a Briton.

Britain, as a Roman province, had not only changed its population, but the forms of society had changed entirely. We may form a notion best and most correctly of the mode of life and of the degree of civilization of the ancient Britons by comparing them with what we know of those of the wild Irish and of the Celtic highlanders of Scotland in the middle ages. Living in septs or clans, each collected round a petty chieftain who had his residence or place of refuge in the least accessible part of his little territory, they had no towns properly so called, and no tie of union, except the temporary one of war, or a nominal dependence on some powerful chieftain who had induced, by some means, a certain number of the smaller clans to acknowledge his sovereignty. Under the Romans, on the contrary, Britain consisted politically of a number of cities or towns, each possessing its own independent municipal government, republican in form and principle within themselves, but united under the empire through the fiscal government of the province, to which they were tributary. Each of these cities, inhabited by foreigners to the island, was expected to defend itself if attacked, while three legions and numerous bodies of auxiliaries protected the province from hostilities from without, and held it internally in obedience to the imperial government. The country was unimportant, and the towns were everything.

It is not my object on this occasion to enter into the political constitution of the cities and towns in Britain, but to speak of them merely ethnologically. In this particular case, there is a great difficulty in destroying the wrong impression made by the terms which are necessarily employed in history. If we call the people Romans, the term is correct politically, but incorrect ethnologically; and if we call them Britons, the name is incorrect both politically and ethnologically, and correct only geographically. The population of Britain during the second, third, and fourth centuries of the Christian era was neither Roman nor British, but an extraordinary mixture of all the different races who had been reduced by the arms of Rome. We have several classes of independent evidence on this point. First, that important record, the Notitia Imperii, compiled at the very close of the Roman period, gives us the titles and country of the different garrisons of the more important posts in the province at that time. We learn there that Frisians held the town or station of Vindobala on Hadrian's wall, and that Stablesians, believed to be a people from Germany, were stationed at Garriannonum in Suffolk. There were Tungrians at Dubræ, or Dover,

and at Borcovicus and Petriana on the wall; Lingones at Segedunum and Congavata on the wall; Nervii at Dictis in Westmorland, and at Alionis; Betasians at Regulbium; and Batavians at Procolitia; all from Belgium. We further find Gauls at the Portus Lemanis in Kent, at Vindolana in Northumberland, and at Glannibanta; different peoples from Spain and Portugal at Anderida in Sussex, at Magæ in Yorkshire, and at Condercum, Cilurnum, Æsica, and Axelodunum; Moors at Aballaba in the North, and another supposed African tribe at Arbeia in Westmoreland; Thracians at Gabrosentis on the wall; Dacians at Amboglanna; Dalmatians at Magna on the wall, at Branodunum in Norfolk, and at Præsidium in Lincolnshire; Fortensians, from Asiatic Sarmatia, at Othona in Essex; Crispians, from Pannonia, at Danum in Yorkshire; Solenses, from Cilicia, at Maglone.

Secondly, many inscriptions found on Roman sites in this island, confirm the statements of the Notitia, and add names of other foreign races in different parts of Roman Britain. Thus we find, from these inscriptions, Lingones from Belgium, Gauls, and Dacians, in different parts of Cumberland; a people called Cavetii at Old Penrith; Spaniards, Dalmatians, and Betasians in the neighbourhood of Ellenborough; Germans at Brougham; Tungrians, Gauls, Spaniards, Thracians, Hamii (from the Elbe), Nervii, Belgians named Cugerni, and Germans, in different stations in Scotland; Vangiones, from the banks of the Rhine, at Risingham in Northumberland; Varduli, from Spain, at Riechester and Lanchester; Thracians at Bowes in Yorkshire; Sarmatians at Ribchester in Lancashire; Frisians at Manchester; Thracians, again, at Wroxeter in Shropshire; and Thracians and Indians at Cirencester. We further learn from sepulchral inscriptions that one Dannicus, who belonged to the Indian cavalry stationed at Cirencester, was a citizen of Rauricum in Switzerland; that Sextus Valerius Genialis, of the Thracian cavalry at the same town, was a Frisian; that Titus Domitius Heron, prefect of the second cohort of Gauls at Old Penrith in Cumberland, was a native of Nicomedia of Bithynia in Asia Minor; that Crispinus Aemilius, prefect of the Ala Augusta at Old Carlisle, came from Tusdrus in Africa; that Publius Ælius, another prefect of the same Ala, was a native of Mursa in Lower Pannonia; that Marcus Censorius, prefect of the cohort of Spaniards at Ellenborough, came from Nîmes in Gaul; that an officer at York named Lucius Duccius was a native of Vienna in Gaul; that Flavius Longus, tribune of the twentieth legion at Chester, was a native of Samosata in Syria; that Nominius Sacer, an individual

buried at Lincoln, was of the city of the Senones in Gaul; that Caius Valerius, standard-bearer of the second legion at Caerleon, was a native of Lugdunum in Gaul; that Julius Vitalis, an officer of the twentieth legion, buried at Bath, was a Belgian; that Caius Murrius, of the second legion, also buried at Bath, was a native of Forum Julii in Gaul; that Caius Cornelius Peregrinus, the tribune of a cohort at Maryport in Cumberland, was a native of Mauritania; that Cornelius Victor, a soldier of the Gauls of Vindolana, was a citizen of Pannonia; and that others mentioned in the inscriptions were Greeks. It must be remembered that the information we thus obtain is very partial, and that we might perhaps have found many other varieties of race in other places in this island, if they had found a place in the Notitia, or if any inscriptions had remained. Other evidence, of a different kind but to the same purpose, such as inscriptions on pottery, &c., are also found. On a circular plate of earthenware found at Colchester we have roughly scratched the cartouche of the name of an Egyptian king, which would seem to show the presence there of Egyptians, and of an Egyptian who was acquainted with hieroglyphics.

The inscriptions, which are generally of much earlier dates than the Notitia, in combination with this record, prove that the same troops remained in each locality during the whole period of the Roman occupation, in fact that they were all virtually so many little military colonies. They show also that, whatever may have been the case at first, these different troops were not always recruited from the countries whence they were derived. It will be remarked in the list given in the Notitia, that the Germans and Belgians together were far more numerous than the others, and many circumstances lead us to believe that even the troops, or colonies, which were named after other and more distant countries were in later times recruited chiefly from the Teutonic tribes, which presented the readiest nursery of soldiers in the declining age of the Roman empire.

We are thus enabled to state that the "Roman" population of Britain consisted of a mixture of very different race, among which there was probably but little pure Roman blood and no British blood. This population was distributed in cities and towns with independent municipal governments, and most of the great landholders in the island were no doubt leading citizens in these towns. They were bound together by a common language, that of Rome, and by the adoption of Roman manners, the result of which was the feeling of a new nationality. Indeed we cannot

give a better notion of what they were than by comparing them with the British settlements in America, while these remained dependent upon the mother country, bearing in mind that the variety of race was much greater in the one case (that of Roman Britain) than in the other. Even the Roman legions, whose duty it was to keep the island in subjection, exhibited in later times the same diversity of race, and we find them actually making common cause with the towns, in their rebellions against the superior government.

One of the great vices of the Roman rule was the oppressive taxation of the provinces, which led not only to general rebellions of all the towns united, but apparently to frequent cases of resistance to the imperial authority by single towns, or by two or three towns in confederacy; and in such cases the rebels invoked the assistance of the German and Northern pirates, and even called in the aid of the still wilder peoples of Caledonia. There was moreover hostility between different towns, arising sometimes from difference of race and partly from commercial or other rivalry, which doubtless contributed no little to the turbulence of this distant province. In Gaul, the history of which is much better known, we trace more plainly these rivalries of the towns, and see how they sometimes degenerated into deadly hatred. In Britain, unfortunately, in consequence of the very limited information which remains, we can only trace its existence by implication. Thus, soon after the middle of the fourth century, when the island province was delivered from the ravages of the Picts, Scots and Saxons, by the imperial general Theodosius, the way in which the historian Ammianus Marcellinus speaks of the event is such as to leave no doubt on our minds that the joint invasion had been encouraged, if not prompted, by the rebellious towns, and that the primary cause of their rising was the inattention of the emperor Valentinian to their complaints of oppressive taxation. A few years later, in 383, the islanders entered into a still more formidable rebellion, and proclaimed Maximus emperor, who carried the troops of Britain over to the Rhine, where he was immediately joined by the Germans. In the beginning of the fifth century, we again find the cities of Britain revolting, when they conferred the title of emperor on a man named Marcus, whom they slew in 407, and chose in his place a person named Gratian, who is distinctly stated by the historian to have been a *municeps*, or burgher of one of the towns, of Britain. They let him reign four months, and then put him to death, and chose another man, named

Constantine, to be emperor. This man, possessed of more vigour and talent than his two unfortunate predecessors, imitated the example of Maximus, and, crossing over to the continent, found there sufficient sympathy to enable him to usurp for a time the empire in the West. After this usurper's departure from the island with, no doubt, great part of the legionary troops, the towns in Britain governed themselves, and protected the province so effectually, that they drove away the Saxons, who had seized upon the occasion to invade it; and when the usurpation of Constantine was suppressed, the cities of Britain retained their independence. Very soon after this, in the year 410, the emperor Honorius addressed letters to the cities of Britain, telling them to do what in fact they were already doing,—to provide for their own safety; and he thus acknowledged their independence.

The Roman population of Britain appears to have been, when united, capable of doing all that the letters of Honorius recommended to it, and the province does not appear to have been weakened by being cut off from the empire, or to have been immediately exposed to the attacks of external enemies. But tradition confirms what appears to be implied by history, that the towns of Britain soon became involved in domestic dissensions and civil wars. We are assured by the later Roman writers that the officers and leading men in the towns in Britain were remarkable for their ambition and love of intrigue; they had now the liberty as well as the inclination to act, and we can easily see, through the obscurity of history at that time, confederacies and counter-confederacies among the towns, in which the old commercial rivalries as well as ambition would play a part, and which led to civil wars and confusion; and it was then that the external enemies, as well Jutes, and Saxons, and Angles, as Picts, and Scots, and Irish, and others, were induced by the prospect of plunder or by the invitations of the contending parties to rush into the province.

The Roman towns were still strong, although they had lost the unity which made the strength of the island, and it took years to reduce them all under the power of the Teutonic invaders, who thus established themselves gradually. The brief story of the Saxon invasion told in the Saxon records is that of the successive reduction, sometimes at rather distant periods, of the Roman towns to their obedience. The Teutonic settlers were a race who, like the ancient Britons, were not accustomed to live in towns, and were in fact prejudiced against them, and wherever they took one by storm or

entered it unconditionally, they plundered and destroyed it. But the larger fortified towns were not easily taken, and the greater number, after unsuccessful attempts at resistance in the field, appear to have yielded upon composition. The ambition of the great chiefs of the conquering race, who soon became emulous of Roman civilization, could not be otherwise than flattered at possessing towns where the articles of Roman ostentation and luxury were manufactured, and when they aspired to form kingdoms, the prospect of an annual revenue in the shape of tribute would restrain the otherwise natural eagerness for present plunder. Antiquarian discovery is continually confirming what many circumstances would lead us to believe, that, while the whole land without was distributed among the Anglo-Saxon conquerors, the original Roman population of which I have been speaking, formed at first from various races, but afterwards recruited chiefly from Germany and Gaul, remained in the towns, coexistent with the new Anglo-Saxon lords of the soil, and still retaining their municipal forms and institutions and their Roman manners, until these became gradually more and more assimilated to those of the Saxons, a change which would be facilitated by the prevalence of Teutonic blood in the towns themselves. The natural antagonism which must have remained between the townsmen and the conquerors continued to exist through the middle ages, and has even reached our own times in a certain sort of rivalry between town and country. I need only add, that to this preservation of the towns, we owe our municipal corporations of the middle ages.

The conclusions I would draw from these considerations are, that at the close of what is called the Roman period of the history of Britain, the remains of the original Celtic population were very small, and perhaps consisted chiefly or entirely of the peasantry who cultivated the land as serfs. Further, that the "Britons" who struggled against the invasions of the Picts and Scots and Saxons were a mixture of races foreign to the island, and lived congregated in towns, and that when the Anglo-Saxons at last obtained the ascendancy, the remains of this population continued to exist among them, and became part of the Saxon States, while the peasantry probably continued to exist in the same servile condition as before. In fact, that the popular story that the people who resisted the Saxons was the ancient Celtic population of the island, and that it retired before the conquerors until it found a last refuge in Wales, is a mere fiction. It may be added that these conclusions are in perfect conformity with what is known

to have taken place in other countries similarly situated. If we cast our eyes over a map of Saxon England during the sixth or seventh century, we shall see that the only towns of any importance then existing were actually the great Roman municipal settlements. To mention but a few, we have, first, the chief town in the island, London; to the South-east of it, Canterbury and Rochester, with the old Roman port towns; to the North-east and North, Colchester, Leicester, Lincoln, Doncaster, York, Carlisle, with one or two towns in Lancashire; and Chester. Westward and Southward of London, we find the important towns of Chichester, Winchester, Old Sarum, Dorchester, Exeter, Bath, Cirencester and Gloucester. Between the historical notices of the Saxon chronicle, and the known continued existence of these towns, we can trace the advance of the Saxons from town to town, as each submitted itself to their supremacy.

I cannot resist the occasion, while on this subject, of pointing out a circumstance connected with it, which has, I think, a meaning that has not yet been discovered. As we trace the advance of the three great divisions of the Anglo-Saxon race in their progress of conquest and settlement, and examine the Roman sites over which they passed, we perceive the smaller towns and the country ravaged and destroyed, while, as I have said before, the larger towns saved themselves from destruction. Now if we look into Wales, which was certainly as completely subjected to the Roman government as any other part of the island, and which we find covered with Roman towns, roads, and settlements, which reached even into the wilds of Snowdon, the same scene of devastation presents itself—even to a greater degree, for while we find Roman towns scattered over Saxon England, we do not find that a single town to the West of the Severn escaped destruction. The strong town of Deva, or Chester, held its ground to the North, and Glevum, or Gloucester, survived, and a Roman town on the site of Worcester, may also have been preserved, but the line of strong towns between Gloucester and Chester—Ariconium, Magna, Bravinium, Uriconium—a number of important towns in South Wales, with Isca, or Caerleon, the station of the second legion—and other no less important towns on the Western and Northern coasts and in the interior,—all these are found to have been utterly destroyed. As this destruction was certainly not the work of the Anglo-Saxons, although it must have taken place during the period of the Saxon invasion, to whom may we ascribe it? If, according to the common story, the "Ancient Britons,"

withdrawing from before the Saxons, had made their last stand in Wales, and found there a place of safety, it seems absurd to suppose that they would have destroyed the towns and country which were to have been their protection. In fact I think that the circumstance I have just mentioned is sufficient in itself to contradict the old story, and that it seems to imply that, contemporary with the invasions of the Saxons and Angles, and the irruptions of the Picts and Scots in the North, Wales itself was visited by a similar and even more fatal invasion. If we further compare the circumstances of the two cases, it seems to me that we are led very strongly to the supposition that the Welsh may be settlers on the ruin of the Roman province on their side of the island, just as the Saxons and Angles were in England, and the Northern invaders in the districts of the south of Scotland. I know that many will be startled at so bold a theory, but I would wish it to be clearly understood that I merely offer it as a suggestion arising out of the consideration of the circumstances of which I have been speaking, and as deserving a fair and careful examination. It may be asked, if the Welsh are not ethnologically what they are commonly represented to be, who are they, and whence did they come? Our total ignorance of the history of the period to which this question refers, as far as regards them, renders it impossible to give any certain answer to it, but we might naturally turn our eyes towards Britany (Armorica), a country which in consequence of its physical character and condition, and from other causes, was never completely Romanised; in which, at the time of which we are speaking, there was apparently a tendency if not a necessity to emigrate; and the Celtic population of which, holding fiercely to their old nationality, were also, from that same position, accustomed to navigation, which was then equivalent to piracy. They might, likely enough join in the scramble for the plunder of Britain. It is unfortunate for the clearing up of this question, that much of what is considered as the history of Britany, during this period, consists of mere modern interpretations of late legends. At the beginning of the fifth century, the Armoricans had recovered their independence, resumed their ancient barbarism, which indeed they can hardly be said to have ever abandoned, and formed a sort of republic of chiefs of clans. We can, however, perceive by the slight notices of the authentic chroniclers, that the Armoricans, become independent, joined in the general spirit of aggression which urged the barbarians to the invasion of the Roman province of Gaul, and that subsequently, when Aetius directed

the Roman arms in Gaul, and just at the time of the Saxon invasion of Britain, the Armoricans themselves were closely pressed and partially subdued, and placed indeed exactly in that condition in which emigration would have attractions for its ambitious and turbulent chiefs. Britain alone offered any field for their activity. Moreover, we suddenly discover at this time a more intimate connection between Armorica and that island.

We can understand, if this were the case, why a people who had far less intelligence for the application of the advantages of civilization than the Saxons, destroyed all that remained of it, and as settlers, took to their own wilder way of living. I confess that there are some difficulties in the way of this solution of a very difficult question; but, at the same time, if it could be proved to be the true one, it would clear away other difficulties which are still more embarrassing. People speak of the so close resemblance between the languages of Britany and Wales, that I have seen and heard it stated by men who are understood to have known both languages well, that a Breton of the present day might hold conversation with a Welshman. Philologists know that such a close similarity as this is hardly within the range of possibility, after the natural changes which all languages undergo in so great a length of time;—if Welsh were historically the representation of a language spoken in Britain in the time of Cæsar, and Breton the similar representation of the language of ancient Gaul. Whereas, if we could suppose that Welsh was Breton, separated from it at the close of the Roman period, and therefore not having experienced the long intervening influence of Roman civilization, the close similarity of the two languages is much more easily understood. Moreover, I have always felt convinced that the mediæval legends of Wales were essentially Breton, and that all the romance literature to which they gave rise was derived from Armorica, and at the same time felt the difficulty of explaining a certain degree of relationship which they seemed to have with the minds and sentiments of the Welsh themselves, a difficulty which would disappear at once before such an explanation. The legends connected with the romance-cycle of king Arthur have always appeared to me to represent the mythic genealogy of the Celtic race as preserved in Armorica, and all our authentic information on the subject represents it as being introduced from thence into our island in the twelfth century. We must not forget that the *Historia Britonum* of Geoffrey of Monmouth was avowedly founded upon a Breton manuscript. Again, we know from what

is observed in other countries, where we are better acquainted with the early social progress, how soon a race in its emigration attaches to its new home the legends and traditions which really belong to the country it has left. These, combined afterwards with a few traditions of a more historical character, form what is usually called the fabulous or heroic period of a nation's history.

However, the present is not the occasion for entering upon this part of the subject, and I shall content myself with stating the suggestion which appears to me worthy of careful consideration. I will only add that a friend, who is profoundly versed in that part of the subject, has remarked to me, since this paper was first read, that he has always considered that a class of inscriptions found in Wales, and belonging apparently to the period subsequent to that of the Roman occupation, which resemble nothing of the sort found in other parts of England, present an analogy with the inscriptions of the same kind found in Britany, and with those only.

My object on the present occasion is more especially to enforce as strongly as I can, upon ethnologists, the necessity of paying constant attention to the historical materials of their science. That branch of it which may be conveniently and properly termed craniography, is at the present time making great advances, and at the same time it is a branch which requires to be treated with extreme caution. Of course we must find our crania in the graves, or, as they are in our island usually called, the "barrows," of the races which are under our consideration. When we have to deal with the well-known burial places of particular races, the subject is clear and simple; but this is not always the case, especially in Britain. I have endeavoured now to make clear to you, the extreme diversity of race which existed in this island under the Romans; and, in a paper which I wrote on a former occasion, and for another purpose, I gave reasons for believing that there was far from uniformity of race before the Romans placed their feet on our soil. Nevertheless, if we could place our hands on barrows or graves in this country, and say with certainty that these belonged to the ante-Roman period, we might still classify them according to their districts, and probably derive from the examination of them certain ethnological facts. But unfortunately this is not the case, and I do not believe that there has yet been found a grave in the island to the south of the Forth and Clyde, which you can venture absolutely to declare to have been older than the Roman period, or even to be that of a Celt. It is true

that there are one or two localities, such as the downs of Wiltshire, in which *probability* is in favour of the interments being Celtic, but this is still far from certain, and it would not be safe to found a system upon it. My own impression is, that we shall arrive at no important ethnological results from the mere examination of the skulls found in England in interments older than the Anglo-Saxon period; owing to the variety of races who had lived in the island contemporaneously or at different periods, and the impossibility of identifying the particular race to which any one interment belonged. With regard to the Anglo-Saxon cemeteries, there can be no doubt that they represent known races, and divisions of those races, and we can enter upon the investigation of them with certainty as to the foundation on which we build, and therefore with tolerable certainty as to the results. To these, therefore, as they may be rendered available to science in the course of future excavations, I would especially invite the attention of the craniographer, in the certainty that his labours will not be altogether thrown away. The opportunity of observation has already been lost in too many cases, but I believe that I can safely promise, that within a short period, new and favourable opportunities will occur, and I feel confident that they will not again be neglected. I trust that, now that the importance of such collections is becoming more generally known, many Saxon cemeteries from different parts of the island will pour in their contributions to our ethnological museums; while I would with equal care collect and examine the skulls from burials which are not Saxon, specifying their locality and the circumstances under which they were found, without calling them Celtic, or Roman, or by any other name, unless its appropriateness be very clearly ascertained.

ON THE LEPIDOPTEROUS INSECTS OF THE DISTRICT AROUND LIVERPOOL.

By Charles Stuart Gregson.

(READ 21ST FEBRUARY,* 1856.)

In preparing this list, I have arranged the species in the position in which they would stand, in the great world of Lepidoptera. All who have gone before me have prepared their local lists as if there were not any other countries where Lepidoptera abound. This will explain the seeming irregularity of passing from Group "one" to "three" or "five" in a Genus, or of commencing a Family or Genus at "two," "four" or "six."

Part I contains the Diurnal Lepidoptera.

Part II the Sphingidæ and Bombycidæ.

Part III (previously printed) the true Noctuidæ, and

Part IV the Pyralidæ.

I propose that Part V shall include the whole of the Geometridæ.

Part VI, the Tortricidæ, and

Part VII, the Crambidæ and Tineidæ.

OMITTED FROM PART III, SECTION 4.

Genus Miana, St.

M. erratricula, Hb.—Plentiful on flowers on the coast at dusk. July and August.

Genus Mania, Tr.

GROUP 2.

M. maura, Lin.—Plentiful on sugar in August. Hale and Croxteth.

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* The former portion of this paper is printed; Transactions volume vii. pp. 237–254.

PART I.

Class INSECTA.

Order LEPIDOPTERA.

Section 1. RHAPALOCERA Bdv.

PAPILIONIDÆ.

FAMILY 2. PIERIDÆ.

Genus PIERIS, Bdv.

P. Brassicæ, Lin.—Abundant about Gardens. Larva on Cabbages, particularly in September and October.

P. Rapæ, Lin.—In profusion about gardens in summer.

P. Napi, Lin.—Plentiful at Linacre and Garston.

Genus ANTHOCHARIS, Bdv.

A. Cardamines, Lin.—Abundant from Allerton to Hale, and plentiful in the district between Crosby, Sefton, and Lydiate; a few may be met with in the swampy parts of Wirral, on the wing. April and May.

Genus LEUCOPHASIA, Steph.

L. Sinapis, Lin.—In a rough plantation between Hooton Station and Mollington. May.

Genus GONEPTERYX, Leach.

RHODOCERA, Bdv.

G. Rhamni, Lin.—Mr. Nixon took it at Hale in April. I took it at Simonswood in the end of July.

Genus COLIAS, Bdv.

C. Edusa, Lin.—I have seen three specimens captured within this district; —one by T. Dean, in Pigue Lane; one by Mr. Cauty, at New Brighton; and one by a non-collector, at Saughall Massey. August and September.

FAMILY 3. LYCÆNIDÆ.

Genus THECLA, Fab.

T. Quercus, Fab.—I have taken this species in a piece of rough ground beyond Eastham. The Chester railway crosses this fine collecting ground. End of July and August.

T. Rubi, Fab.—Jackson's Wood, Hargreave Hall, and Sutton, Hale and Lydiate. Local. May.

Genus CHRYSOPHANUS, Hub.

LYCÆNÆ, Och. POLYOMMATUS. Bdv.

C. Phlæas, Bdv.—Generally distributed, the finest specimens between Bootle and Walton, in August.

Genus POLYOMMATUS, Steph.

LYCÆNA, Bdv.

P. Argiolus, Bdv.—Taken around Eastham and Hooton, by T. Harris, Esq., and at Hale, by Mr. Nixon. May.

P. Alsus, Fab.—Two specimens by myself, at Neston. Several between Rainhill and Ditton. Early in June.

P. Ægon, Bork.—Plentiful on dry heaths, particularly on Bidston Hill in July.

P. Alexis, Fab.—In profusion on the sand hills and on the railway banks at Olive Mount.

FAMILY 4. ERYCINIDÆ.

Genus NEMEOBIUS, Steph.

N. Lucina, Steph.—I have taken a few specimens of this species at the place at which I got Thecla Quercus. End of May.

FAMILY 6. NYMPHALIDÆ, Swa.

Genus ARGYNNIS, Och.

A. Aglaia, Och.—Plentiful a few years ago at New Brighton; a few specimens may still be seen at this side of the Red Noses; not scarce from Little Brighton to Hightown, on the Lancashire coast, in July.

A. Euphrosyne, Och.—Not scarce in the rough woods beyond Bromborough. May.

Genus MELITÆA, Fab.

M. Artemis, Fab.—Plentiful from Maghull to Lydiate, particularly on the canal bank. May.

Genus VANESSA, Fab.

V. Cardui, Fab.—Plentiful where its food abounds; its larvæ may be detected upon the thistles by the discolouration of the lower leaves. Flies in Spring and August.

V. Atalanta, Fab.—Plentiful where nettles grow. September.

V. Io., Linn.—Abundant, larvæ gregarious on nettles. Spring, July, and August.

V. Urticæ, Linn.—Larvæ in profusion on nettles.

V. C. album, Fab.—Hooton, Hale, Woolton, not plentiful; one in my garden September 12, 1854.

FAMILY 9. SATYRIDÆ.

Genus SATYRUS, Bdv.

S. Semele, Linn.—Abundant on waste lands in July and August.

S. Janira, Och.—Common in pastures. June.

S. Tithonus, Linn.—Plentiful on sandy banks in lanes. July.

S. Megæra, Linn.—In lanes everywhere in Summer.

S. Ægeria, Linn.—Taken from Bromborough to Eastham, by Mr. Edmondson, on the high road. April.

S. Davus, Fab.—In profusion on Simonswood moss. June.

S. Pamphilus, Linn.—Common on unenclosed grounds.

FAMILY 10. HESPERIDÆ, Bdv.

Genus PAMPHILA, Steph.

(HESPERIÆ AUCT.)

P. linea, Fab.—A single specimen taken by myself, July, 1841, is the only instance of its capture in this district, that I am aware of. I took it near Gill Brook, Birkenhead.

P. sylvanus, Fab.—Is abundant on Simonswood moss, and plentiful upon Crosby sand hills, in May.

Genus THANAOS, Dup.

T. Tages, Linn.—In profusion in the same localities as Pamphila sylvanus.

End of Part I.

PART II.

SECTION 2. HETEROCERA, Bdv.

FAMILY 2. SESIARIÆ, Bdv.

Genus TROCHILIUM, Sco.

SESIA, Lasp. ÆGERIA, Fab.

T. Tipuliformis, Leach.—Taken at Hale Hall garden by Mr. Almond, and at West Derby by B. Cooke, Esq.

FAMILY 3. SPHINGIDÆ.

Genus ÆGERIA, Fab.

Æ. Bombyciformis, Hub.—May be taken on poplar trees at Birkenhead, before 11 a.m.; it sits on the trunk of the tree. I have naturalised this species around Old Swan and Highfield. I placed the eggs on various poplars and willow trees ten years ago; it is now an abundant species here.

Genus SESIA, Fab.

S. Bombyliformis, Fab.—I have only seen one specimen; it was taken at Bidston. One by Mr. Leyland from same locality. (Mr. Almond.)

Genus MACROGLOSSA, Och.

M. Stellatarum, Och.—Plentiful on Wallasey and Crosby sand hills; flies on the highest hills when the sun is hottest. Larvæ on Galium verum.

Genus DEILEPHILA, Och.

D. Porcellus, Linn.—Plentiful flying over yellow Iris flowers, and over catch-fly flowers, about the coast. Dusk. May and June.

D. Elpenor, Linn.—May be taken with Porcellus. Larva on E. hirsutum in August.

GROUP 2.

D. Euphorbiæ, Och.—A specimen of this species taken in an out-house at Bidston, by W. Morgan, is now in my cabinet; two of its larvæ have been taken between Little Brighton and Hightown, from Euphorbia Paralias.

D. Galii, Fab.—A specimen taken by Mr. Rainford, between Bootle and Linacre Marsh.

D. lineata, Fab.—I possess a fine specimen taken by F. Hitchmough, at Hale, April, 1847.

Genus SPHINX, Linn.

S. Convolvuli, Linn.—Oxton Hill, Liscard, Hale, and New Brighton, over petunias and hollyhocks. Dusk.

Genus ACHERONTIA. Och.

A. Atropos, Och.—Hale, Bidston, and Bootle, on potatoes; 17 bred by W. Rainford; fed upon *Lycium lanceolatum*.

Genus SMERINTHUS, Lat.

S. Ocellata, Linn.—Plentiful under overhanging banks at New Brighton, in June; larva on sallows in August.

S. Populi, Linn.—Plentiful where Ontario poplars grow, in June; larva in August.

FAMILY 4. ANTHROCERIDÆ, West.

Genus ANTHROCERA, Scop.

A. Trifolii, Esp.—In profusion on Hale Marsh. June.

A. ——— ?—A 5 spot, Loniceræ? near St. Helens, on a dry hill-side on the road to Eccleston.

A. Filipendulæ, Linn.—Common on waste lands and about old pastures.

Genus PROCRIS, Fab.

P. Statices, Fab.—Hale Marsh, the Dungeon, and below Crosby. June.

FAMILY 5. LITHOSIDÆ, Steph.

Genus EUCHELIA, Bdv.

E. Jacobæa, Linn.—Plentiful on the coast and upon the mosses, in June. Larvæ on Senecio Jacobæa, July.

Genus LITHOSIA, Fab.

L. Rubricollis, Fab.—I have bred this species from pupa in moss about Jackson's Wood, and Bidston.

L. complana, Linn.—Simonswood Moss; two specimens taken on the wing at dusk; others seen end of July, 1851.

L. Complanula, Bdv.—Plentiful around West Derby, where beeches grow. Larvæ on beech trunks when covered with Lichen ———?

L. Mesomella, Linn.—I meet with this insect sometimes in a wood between the Little Britain inn and Simonswood Moss. June.

Genus NUDARIA, Haworth.

N. Munda, Linn.—Abundant from Tranmere Hall to Prenton, in June; feeds upon Lichen on old stones. Bred freely by Mr. Almond.

FAMILY 6. ARCTIIDÆ, Leach.

CHELONIDES, Bdv.

Genus NEMEOPHILA, Steph.

N. Russula, Linn.—In the swampy ground in Jackson's Wood, and at the Decoy at Hale. July.

N. Plantaginis?—Prenton Hill and Stourton; flies before noon.

Genus ARCTIA, Steph.

GROUP 1.

A. Caja, Linn.—Abundant in the larva state in lanes.

GROUP 2.

Genus PHRAGMATOBIA, Steph.

P. Fuliginosa, Linn.—Common on waste lands. May and August.

GROUP 3.

P. Lubricepeda, Fab.—In profusion about gardens in June.

P. Menthastri, Fab.—In lanes and gardens; common.

P. mendica, Linn.—About dirty gardens in Wirral, where chick weed grows freely, particularly if there are lettuces growing amongst the chick weed.

FAMILY 7. LIPARIDÆ.

Genus LIPARIS, Och.

GROUP 3.

L. Salices, Och.—Larvæ plentiful at Crosby; feeds upon Ontaria poplar in May.

GROUP 4.

L. Auriflua, Fab.—Larvæ abundant in the thorn hedges at Bidston and Wallasey, in July.

Genus ORGYIA, Och.

GROUP 1.

O. Cœnosa, Hub.—My friend, T. Townley, first discovered this species at Altcar, and afterwards at Bidston Marsh. Larva on reeds in May.

GROUP 2.

O. pudibunda, Och.—Plentiful near woods and plantations.

O. fascelina, Och.—Larvæ in profusion on the sallows at Crosby, in April and May.

O. Coryli, Och.—A few bred from larva, taken at Croxteth Park.

GROUP 3.

O. antiqua, Och.—Abundant throughout the district, on the wing. August and September.

FAMILY 8. BOMBYCIDÆ.

Genus CLISIOCAMPA, Curtis.

C. Neustria, Linn.—Plentiful from Upton to West Kirby. July.

Genus ERIOGASTER, Germar.

E. Lanestris, Germ.—Larvæ plentiful on dog rose and thorn, about old pits in Wirral. May and June.

Genus PŒCILOCAMPA, Steph.

P. Populi, Linn.—Bidston Light House, and at lamps in West Derby. October and November.

Genus LASIOCAMPA, Steph

L. Rubi, Linn.—Common on heaths and waste lands. May.

L. Quercus, Schr.—Plentiful at the same places as Rubi. June and July.

L. Trifolii, Fab.—Larvæ abundant in May at New Brighton and at Crosby; perfect insect in August.

Genus ODONESTES, Ger.

O. potatoria, Germ.—Common in lanes.

FAMILY 9. SATURNIDÆ.

Genus SATURNIA, Sch.

S. Carpini, Bork.—Plentiful on heaths and mosses. April and May.

FAMILY 11. ZEUZERIDÆ.

Genus COSSUS, Fab.

C. Ligniperda, Fab.—Has been taken all around the district.

HEPIALIDÆ, Steph.

Genus HEPIALUS, Fab.

H. Humuli, Linn.—Common on grass land in June.

H. Velleda, Esp.—Wood near Simonswood Moss, on honey-suckle in July.

H. sylvinus, Linn.—Liscard and New Brighton; on the wing at dusk in July.

O. lupulinus, Fab.—Abundant in old lanes. June.

H. Hectus, Fab.—In damp woods; flies about at 7 o'clock, p m., at Bromborough, Hale, and Croxteth. June.

FAMILY 14. DREPANULIDÆ.

Genus CILEX, *Leach.*

C. spinula, W. V.—Plentiful in lanes. June.

Genus PLATYPTERYX, LASP.

GROUP 1.

P. lacertula, Esp.—Birch Wood, and near Simonswood Moss.

GROUP 2.

P. falcula, Hub.—Common where Lacertula is taken. May and June.

FAMILY 15. NOTODONTIDÆ.

PSEUDO-BOMBYCINI, Boisd.

Genus CERULA, Sch.

C. bifida, Hub.—Prenton Wood and Wallasey, on poplar trees. May.

C. Vinula, Sch.—Plentiful where poplars and willows grow. May.

Genus NOTODONTA, Och.

GROUP 1.

N. camelina, Och.—Larvæ plentiful on sallows in the pleasure grounds at Bidston, in September; also on birches.

GROUP 2.

N. dictæa, Och.—Larva on sallows and poplars; perfect insect; comes to lights.

N. dictæoides, Esp.—Comes to Bidston Light House on dark nights in July. Larva on *birch* August and September.

GROUP 3.

N. Dromedarius, Och.—I take its larvæ at Simonswood and at Birch Wood, by beating in September.

N. ziczac, Linn.—Larva on willows on the coast. September.

GROUP 5.

N. chaonia, W. V.—First taken by B. Cooke, Esq., on a gate-post at Eastham. Two at Hooton by T. Harris, Esq. April.

Genus DILOBA, Boisd.

D. cæruleocephala, Linn.—Common at lamps in Autumn. West Derby.

Genus PYGÆRA, Boisd.

P. bucephala, Linn.—Larvæ common on oaks and willows in August.

Genus CLOSTERA, Hoff.

C. Reclusa, Fab.—One specimen taken at the old wood in Kirkby, is all I have seen in this district.

End of Part II.

PART III.—See Vol. vii. p. 242.

PART IV.

SECTION 6.

HETEROCERA.

DELTOIDÆ.

FAMILY 2. HYPENIDÆ, H. S.

Genus HYPENA, Schrank.

GROUP 3.

H. probosidalis, Och.—Abundant in stables.

Genus HYPENODES, Gn.

H. costæ-strigalis, St.—Plentiful on Prenton and Bidston Hills. Comes to sugar in July.

FAMILY 3. HERMINIDÆ, Dup.

Genus RIVULA, Gn.

R. sericealis, W. V.—Hut of Hut's Wood, Hale. May and June.

Genus HERMINIA, Lat.

GROUP 4.

H. tarsicrinalis, Knock.—Taken by W. Skellon at Green Bank.

H. Grisealis, W. V.—Not uncommon in Bidston Plantation, and plentiful at Kirby Old Wood, and at Hale.

GROUP 7.

H. cribralis, Hub.—Specimens taken by Mr. Nixon, at or near Hale.

SECTION 7.

PYRALIDÆ.

FAMILY 1. *Genus* PYRALIS, Linn.

GROUP 2.

P. farinalis, Linn.—In profusion in granaries.

GROUP 3.

P. glancinalis, Step.—One taken at Hale Bank is in my cabinet.

Genus AGLOSSA, Lat.

A. pinguinalis, Lat.—Plentiful in old stables.

SECTION 8.

LURIDÆ, Gn.

FAMILY 2. ENNYCHIDÆ, Dup.

Genus PYRAUSTA, Sch.

P. punicealis, W. V.—Lydiate. Scarce.

P. purpuralis, Curt.—Sutton, Parkgate, and Ditton.

P. ostrinalis, Curt.—Plentiful on the sand hills.

Genus RHODARIA, Gn.

R. sanguinalis, Linn.—Wallasey sand hills, where wild thyme grows. Evening, June.

Genus HERBULA, Gn.

H. cespitalis, W. V.—Not scarce on the Cheshire coast sand hills.

Genus ENNYCHIA, Tr.

E. cingulata, Step.—Plentiful, but local, on the Wallasey sand hills; flies about 5 p.m. May and August.

FAMILY 5.

HYDROCAMPIDÆ, Gn.

Genus CATACLYSTA, H. S.

C. Lemnalis, H. S.—In every old pit.

Genus PARAPONYX, Steph.

P. Stratiotalis, Step.—May be found in a large pit behind New Brighton, on the lower side, opposite the stile road to Wallasey Church; is also in a round pit on Bidston Marsh. Flies at dusk, June.

Genus HYDROCAMPHA, Lat.

H. Nymphæalis, Step.—Abundant around pits. June.

FAMILY 8. BOTYDÆ, Gn.

Genus BOTYS, Lat.

GROUP 4.

B. Fuscalis, W. V.—Plentiful on Bidston Marsh. June.

GROUP 5.

B. Urticalis, Steph.—Abundant at Liscard, and pupæ plentiful on white poplar, under loose bark.

Genus EBULIA, Gn.

E. crocealis, Tr.—Woods around Kirkby, Eccleston, and Lydiate. June.

E. Sambucalis, Albin.—Plentiful at Wallasey, Ford, and Linacre, in garden hedges.

Genus PIONEA, Gn.

GROUP 2.

P. forficalis, Linn.—May be bred from larvæ found in curled leaves of Silene inflata, in May.

Genus SPILODES, Gn.

GROUP 2.

S. sticticalis, Linn.—Two specimens taken by N. Cooke, Esq., and five specimens taken by R. S. Edleston, Esq., at Wallasey sand hills, are all that have yet been taken here. July, in the sun.

Genus SCOPULA, Sch.

GROUP 1.

S. lutealis, Haw.—Abundant about ditches; bred from Silene inflata. June.

GROUP 2.

S. olivalis, W. V.—Plentiful in damp places, particularly in woods.

S. Prunalis, W. V.—Abundant on Bidston Marsh and at Hale. June.

GROUP 4.

S. Ferrugalis, Hb.—I once met with this species in a clump of trees, at the bottom of Mrs. Peacock's garden, at Saughall Massey. I have not heard of it in any other locality.

SCOPARIDÆ, Gn.

Genus STENOPTERYX, Gn.

S. hybridalis, Hb.—Plentiful on Bidston Marsh, and on the sand hills.

Genus SCOPARIA, Haw.

GROUP 2.

S. ambigualis, Tr.—May be taken at Jackson's Wood, and at Birch Wood. July.

S. cembralis, Haw.—Neston and Woodchurch. June and July.

S. muralis, Curt.—Prenton Hill. June.

S. mercuralis, Haw.—Bidston Hill and Fir Grove. End of May.

S. truncicolalis, Sta.—Prenton Wood. July.

S. frequentalis, Sta.—Bidston, Edge Lane, and Green Bank. End of May.

S. disputalis, Greg. N.S.—Simonswood Moss. May. This distinct species is nearest allied to Frequentalis, Sta., and Mercurialis, Haw., but is readily distinguished from both these species, by its more suffused

appearance, the first fascia being less sharply defined, and the outer fascia more acutely bent outwards, the upper wings broader, and the under wings lighter, than in either of the above insects. Plentiful.

S. resinalis, Haw.—Fir Grove, Croxteth, and Allerton Hall. May & June.

S. coarctalis, Zell.—Plentiful throughout the district. Summer.

GROUP 3.

S. palidulalis, St.—Bidston Marsh, and on the wet land below Crosby, Simonswood, and other mosses.

End of Part IV.

ABBREVIATIONS OF AUTHORS REFERRED TO.

Alb.	Albin's Natural History of English Insects. London, 1724.
Bdv.	Boisduval's Europæorum, Lepidopterorum. Paris, 1840.
Bork.	Borkhausen Europaischen Schmetterlinge. Franckfurt, 1792.
Cl.	Clerck James, Insectorum Rariorum. 1764.
Curtis or Curt.	Curtis' British Entomology. London, 1823-1840.
Dalm.	Dalman Anatecta Entomologica. 1823.
De Geer.	De Geer. History of Insects.
Dup.	Duponchel. Natural History of Insects, and Catalogue. 1844.
Esp.	Esper. Die Schmetterlinge in Abbidungen nach der natur. 1786.
Fab.	Fabricius Entomologia Systematica. 1793.
Ger.	Germar. Magazin der Entomologia. 1813-1821.
Gn.	Gnenée. Essai sur les Noctuélites, &c.
Haw.	Hawarth Lepidoptera Britanica. 1803.
Hb.	Hubner Sammlung Europaischer Schmetterlinge. 1796.
Lat.	Latreille Gen. Crustaceorum et Insectorum. Paris, 1806-1809.
Linn.	Linne Systema Naturæ. 1767.
Och.	Ochsenheimer Systema Glossatorum Europæ. 1811.
H. S.	Herrich Schoeffer. 1844 to 1846.
Sch.	Schrænck Fauna Boica. 1801.
Scop.	Scopoli Entomologia Carniolica. 1763.
St. or Steph.	Stephen's Illustrations of British Entomology. 1829.
Tr.	Treitschke Schmitterlinge von Europa. 1825-1826.
Westw.	Westwood. Westwood and Humphry's Butterflies and Moths. 1841-1845.
W. V.	Wiener Verzeichniss. 1801.

ON THE AREA AND POPULATION OF THE MANCHESTER DISTRICT.

By J. T. Danson, Esq., F.S.S., Vice-President.

(READ 14TH FEBRUARY, 1856.)

Near Manchester there are fifteen other towns*, so connected with it by the manner in which all have come into and are kept in existence, that I see no way of dealing with them asunder, and justly. Hence I say "the Manchester District"—not "Manchester."

OUTLINE.

A circle having Manchester in its centre, and a radius of about fourteen miles, would include all these towns and their suburbs. But the district is not circular, nor is Manchester, in a geometrical sense, even near its centre.

Were the district described by a line drawn round the entire group of towns, and passing at a minimum distance of five miles from the centre of each of the outer ones, its greatest length would be on a line nearly due east and west, from Leigh through Manchester and Staleybridge—about twenty-nine miles. And the area of the district thus described would be about 341 square miles, or 218,240 acres.

The divisions of the surface now in use for enumerating the population

* To the word "town" I here attach this meaning, and no other, viz.,—that of an area, great or small, inhabited, permanently, by a minimum number of persons, whose number, in relation to the area occupied, affords an average density not below another minimum. In this instance, the minimum number is 2000 persons. The minimum density is ten persons per acre. Thus I call Atherton a town, because, on 250 acres of ground, I find there, in 1851, 2,780 persons. And I call Eccles a town, because on 325 acres, I there, at the same date, find 4,108 persons. In a previous paper, on the population of Liverpool and its environs, I have distinguished town from suburbs. Here this distinction is not marked. It was not necessary to the purpose in view; and would, if attempted, have involved a serious addition to the labour of the gentleman to whom I am indebted for the computations on which the greater part of the present paper is based. So much for the guidance of the reader; and not more, I am assured, than is needed. If he can form a better definition of a town than the one here used I shall be glad to hear from him.—J. T. D.

of this area do not coincide exactly with the boundary thus assumed. But the difference is not great. If we take all the Parishes and Townships, considerable portions of which lie within the assumed boundary, and make, in each case, only such allowances for surplusage as seem to be quite necessary, they are found to cover a gross area of 222,576 acres, or nearly 348 square miles.

A comparison will make clearer the significance of these figures.

London and its suburbs, described together in the census of 1851 as "the London District," has an area of 78,029 acres. In other words it was, in size, compared with the Manchester District, as two to seven nearly.

The population of the 348 miles of the Manchester District, in 1851, was 1,044,816 persons. That of the London District, at the same date, 2,362,236. Here the proportion is reversed. Though three and a half times as large, the provincial district has not half the population of the metropolitan. In few words, the London District is about eight times as densely peopled as the Manchester District.

Nevertheless, apart from the London District, there is no other in the United Kingdom, and, excepting also Paris and its suburbs, no other in Europe, on which a million of persons are so closely placed as they are in the Manchester District. And in one respect this group of population stands before every other of like magnitude in Europe, or perhaps in the world. *It has increased with greater rapidity during the last fifty years.* In 1801 the London District contained a population of 958,863—the Manchester District, as above described, one of 311,544 persons. In the fifty years 1801-51, for every one hundred persons at the beginning, 146 were added in the London District, and 236 in that of Manchester. On the other hand, it will be observed that the difference already established between the two districts is so great, that the lapse of even another half century, with the same rate of increase in each, would not much disturb their present relative proportions. The Manchester District would, in 1901, have only about three-fifths of the population of the London District; and the relative density would be only about one-fifth, instead of one-eighth.

The same difference runs through the entire history of the two districts. London was a considerable port and mart, and a royal residence, when much of the Manchester District was yet a free and pleasant hunting

ground for wolves. And the manner in which the population of this district has been brought together explains it.

THE GERMS OF THE MANUFACTURING POPULATION.

On a fine clear morning some 520 years ago—the sunlight being thrown to the north-west—the view from Blackstone Edge, over the site of this district, must have presented an almost unbroken expanse of wood and waste. Its human inhabitants were few, and even less visible by their works than the same number would be now. The enclosures were very few, and the half timbered, or wattled, houses of the time, were less easily distinguished at a distance than the stone or brick edifices of a later date; and when grouped together, their fires, fed almost exclusively with wood, cast into the air no cloud of lingering smoke, to mark the whereabouts of a town.* On the right of a spectator placed as we have supposed, stretched the broad surface of Brandwood Moor—russet or purple, as the season might determine—while beyond, deeply embayed in the straggling northern hills, lay the dense dark foliage of Rossendale forest. Ranging westward across a long line of wooded bluffs and bare sunlit slopes, and trending a little to the south, the eye may have caught, in the foreground of a tract of high-lying moorland, the half-timbered walls and long thatched roofs of the town of Bolton, the population of which had of late received a notable addition in a little band of men, uncouth of garb and strange in speech, and destined to sow seed that, after long delay, should have a mighty growth. Curiously dexterous in the art of weaving woollen cloths, they had come from Flanders, at the instance of Edward III, with the consent of their liege lord, the Duke of Hainault, the king's father-in-law, and under the guidance of an Englishman named John Kemp. (A.D. 1331.) Here they set up their looms, and wove, and taught weaving; and Bolton became, in due time, the centre of a supply of English woollen cloths such as had not been seen before.

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* Of the sixteen towns, records we may accept without much risk of being deceived, attest the existence, in some shape, at the period here referred to, of six. Manchester and Stockport were undoubtedly Roman stations, and were never afterwards abandoned by the people then collected around them. Bury was a Saxon town; and there is some evidence of its having also been a Roman station. Leigh, Rochdale, and Ashton-under-Lyne—the two former possessing ancient churches, and the last named claiming by other title an ancient existence—may also, if we accommodate our notion of a town to the circumstances of the time, be permitted to fall into the same category. Towns these, however, only such as might now be found in some parts of New Zealand or the Cape colony, and but small exceptions to the general aspect of the country.

But there was absolutely nothing in the aspect of the time to warrant augury of the gigantic ultimate growth of this Flemish seed. Nearly all the commercial energy and intelligence of Europe were still concentrated around a few centres, not one of which lay within a thousand miles of Bolton. The arts of book-keeping and banking, yet in their infancy, were unknown beyond the country of their birth, but these were used with a facility and success abundantly obvious in the history of the time. A Florentine banker farmed the customs revenue of England. Jews, the only capitalists in the country, still took interest on their loans in peril of personal mutilation and ruin, so could hardly look for less, on the best security, than thirty per cent. per annum. Commerce was growing, and learning was reviving, but more slowly in England than elsewhere. The Roman Church yet occupied the capital of Western civilization; and the crowning of Petrarch, and the tribunate of Rienzi, within the very same decennium—premonitory flashes of a new era in politics as in poetry—seemed to confirm to the old European centre of thought and action its ancient monopoly of wealth and power, even through a new day of knowledge and industry. It is to be observed, however, that the true sources of England's present greatness were then hidden, and could scarcely even have been guessed at. Maritime enterprise was limited, as in all past time it had been, to the narrow bounds of a continental coasting trade; and he was a daring man* who went so far to sea as to find the Madeira islands. Steam was undreamed of. The down of the cotton-pod was known, or used, only in the remote unvisited east. And though Newcastle coal did, about this time, make its first appearance in London, it had, as yet, no particular value to the Bolton weavers. Still must we deem the importation of these Flemish weavers a long stride in the path we have since trodden. England in 1330 grew wool for export, but wove no cloth the rich would wear, nor sent one yard of it abroad. And it needed something of the spirit that fought at Cressy to conceive and carry at Westminster the Acts of 1337, for summarily throwing all England, "after Michaelmas next," on the home trade for supplies of cloth: first by prohibiting the export of wool, and secondly by forbidding any person, of whatever rank, to wear cloth of foreign make—acts too sweeping to be obeyed, yet well serving to indicate the strength, the direction, and the

* One Machan, an Englishman, has credit for this feat, A.D. 1344.

extent of the project commenced with the Flemish immigration into Bolton, five or six years before.

SITES OF THE TOWNS.

All the considerable towns of this district are on the lines of its water shed. And these unite to pour the entire natural drainage of the district into the Mersey. Ascending this river, from Liverpool, we arrive on the borders of the Manchester District, as here described, about half way between Warrington and Manchester. Here the Irwell is received on the northern bank. Entering the Irwell we ascend in a north-easterly direction to Manchester. There, turning to the north-west, and passing, on the west bank, the junction of the Tonge, a little river flowing from Bolton, we ascend towards Radcliffe, passing, again, on the eastern bank, the junction of the Roch, and reach, successively, Radcliffe and Bury. Returning down the Irwell to its junction with the Roch, we pass eastward up that river, first to Heywood, and then to Rochdale. Again returning down the Roch and the Irwell to Manchester, we may ascend, thence, the Medlock, an affluent of the Irwell to Oldham. And passing down from Manchester to the junction of the Mersey and Irwell, we may, by ascending the former, pass, successively, through Stockport, (where the Mersey becomes the Tame,) Hyde, Ashton-under-Lyne, and Staleybridge. I have thus enumerated eleven out of the sixteen towns. The remaining five are the smallest of the group. Three of them—Atherton, Tyldesley, and Leigh, lie together in the extreme west of the district, and being inhabited chiefly by hand-loom weavers have shared the depression which has been gradually forcing that form of industry out of existence. Another, Eccles, is a mere suburb of Manchester; and until the factories of Patricroft, in its immediate neighbourhood, were established, was a suburb of residences for the rich rather than of industry for the poor. And the last, Middleton, a small factory town, formed around what was originally a rural village in a fertile vale, with a few hand-loom weavers, evidently owes its growth, such as it is, to the means of communication established for the use of the surrounding towns.

It will be observed that the use of water power must have rapidly given to several of these towns manufacturing advantages not possessed by Bolton. And amongst these Manchester soon took the lead, as being not only well endowed in this respect, but so placed in the valley of the

Mersey as to have the shortest and easiest communication with the port whence all drew their raw material, and to which the greater part of their exportable produce was sent.

The use of steam power has not disturbed the pre-eminence of Manchester. All these towns are by nature about equally well supplied with coal. And the canals first, and afterwards the railways, following most easily, as well as most profitably, the lines of most gradual ascent from the coast, have taken the general direction alike of the natural water shed and of the principal lines of road.

The district as above described, is bounded on the east by the scattered and devious, but tolerably central, line of hills running north and south through the greater part of England; and on the north by a straggling off-set from that line of hills running westward. In the nook formed by the junction of these two lines geology harmonises with commerce. There is here a depression great enough to permit the easy passage of a canal, joining the Mersey of Lancashire and Cheshire with the Calder of Yorkshire; and so achieving one of the most remarkable results of the canal-mania which distinguished the days of our grandfathers, somewhat as the railway-mania has marked our own.

All the ground in the district north of Manchester is more or less hilly. South of Manchester the land is low; and extensive mosses or peat bogs occupy a portion of the valley of the Mersey.

If a line be drawn through the centre of Manchester, due north and south, and crossed with another drawn due east and west, it will be observed that Rochdale is the most northernly town in the district, and that it is one of four lying in the north-east section of the figure so described; the other three being Heywood, Middleton, and Oldham. Two more, Ashton and Staleybridge, may be said to be due east of Manchester, both within five miles of it, and so near together that they may, for most purposes, be deemed one town.

Hyde and Stockport fall into the south-eastern section.

In the south-western section there is no town, the ground consisting of extensive and low-lying flats, on the banks of the Mersey and Irwell.

The north-western section is in some respects the most remarkable. It includes seven of the fifteen subsidiary towns. A line drawn from the

centre of Manchester, in a due north-west direction, would pass, very nearly, through the centre of Bolton, the largest of the seven, and, after Manchester, the largest town in the district. Excepting Rochdale (which owes a part of its growth to Yorkshire influences, as felt through the dip in Blackstone Edge), Bolton is also further from Manchester than any other considerable town in the district.

MATERIALS—WHENCE AND HOW OBTAINED.

I have said that the area of this district is about 222,500 acres; that its aggregate population in 1801 was 311,544 persons; and that in 1851 this number had risen to 1,044,816. These figures have been obtained by selecting from the census of 1851 the area and population of each of the townships and parishes comprised in the district, as above described, and where a part only of a township or parish could be taken as within the district, the area and population of the part excluded was carefully estimated with regard to all the data afforded, not only by that census, but also by each of the five preceding. The population of each of these separate areas, in 1851, was obtained, as to 56 places, not forming part of any town, directly from the census of 1801. As to 27 similar places, it could be obtained only by estimate; so many (1) falling partly out of the district, or (2) not having been separately dealt with for the census of 1801, or (3) evidently falling wholly or partly within one of the sixteen towns.

The area taken is in all cases that of the land not usually under water.

The area and population of each of the sixteen towns was obtained for 1801 and 1851, by a careful consideration of the materials afforded by the censuses, and of the local circumstances and character of each town.

Appended to this paper is a table, containing the principal results for each registration district, town and country. The whole of the detailed calculations and estimates involved in the production of this table were the work of my friend (and a fellow member of the Historic Society), Mr. T. A. Welton, of Fenchurch Street, London; and I have much pleasure in acknowledging that the Society is indebted rather to that gentleman than to myself, for the greater part of the figures on which the present paper is based.

DETAILS.

I have said that I find in the district, as described in the census of 1851, sixteen towns. These are :—

Names.	Area, 1851.	Population.		Increase per cent.	Density to acre in 1851.
	Acres.	1801.	1851.		
Manchester.....	9785	94409	404808	329	41.37
Oldham.....	2317	9024	46820	419	20.21
Stockport.....	2155	18880	53610	184	24.88
Bolton.....	1820	17429	60711	248	33.36
Ashton-under-Lyne	1525	4837	40723	742	26.70
Bury.....	1470	6852	27762	305	18.89
Stalybridge.....	1240	1500	23877	1492	19.25
Rochdale.....	1130	8500	29195	243	25.83
Heywood.....	750	2800	12194	335	16.26
Hyde.....	650	863	10050	1065	15.46
Middleton.....	400	1765	5740	225	14.35
Leigh.....	385	700	5206	644	13.52
Radcliffe.....	363	1847	5002	171	13.78
Eccles.....	325	2000	4108	105	12.64
Tyldesley.....	280	1809	3608	99	12.89
Atherton.....	250	2109	2780	32	11.12
Totals....	24845	175324	736195	320	29.63

Here the towns are arranged in the order indicated by the extent of the area occupied by each in 1851. It will be observed that this order coincides but roughly with that of the population at the same date, and scarcely in any degree with any other of the several variations exhibited.

Manchester, the largest town, whether measured by area or by population, and also the most densely peopled, is at the top of the list; and Atherton, the smallest, measured either way, and the least densely peopled, is at the bottom. But between these extremes, as may be seen at a glance, are wide variations of nearly every element brought to view.

The towns whose population has increased most rapidly during the fifty years in view are, very obviously, those in the valley of the Tame—Staleybridge, Hyde, and Ashton. But these are far from showing an uniform rate of increase. Staleybridge has increased 1,492 per cent., Hyde 1,065, and Ashton 742. And they have different densities:—19, 15, and 26 persons per acre. The significance of these differences is to be determined only by local investigation.

To make up the entire district, there are to be added 91 country town-

ships or parishes, or parts of these, which if added, in the aggregate, to the above table, make the whole area of the district 222,576 acres, its population in 1801—311,544; and in 1851—1,044,816. The increase in 50 years, in the whole district, having been 235 per cent.

The country districts, taken alone, have an area of 197,731 acres—or about eight times that of the towns. Their population was 136,220 in 1801; and 308,621 in 1851. In other words, at the beginning of the century, the town population of the district was to the whole as about five to nine. In 1851 the proportion was as rather more than seven to ten.

Taken by themselves, the country districts have increased their population in the last fifty years faster than the average of England, town and country together; but their rate of increase has been much behind that of the towns.

But this, it will be borne in mind, relates only to the entire fifty years, taken as a single period. If the rates of increase be examined for every ten years, it is found that, as a rule, all the towns were growing most rapidly between 1821 and 1831; and that in the country districts the period of most rapid growth was 1801 to 1811, and the period of slowest growth 1841 to 1851. The present paper has reference only to the aggregate period 1801-51; and its results may therefore in some cases not harmonise with those of observation confined to a part of that period.

The tables at the end of the paper exhibit the whole district divided into seven groups of towns and their surrounding country districts.

In the first group, the towns of Manchester and Eccles, with a population of 473,366 are surrounded by twenty-one country districts, with a population of 64,450, or less than one-seventh. The most densely peopled part of the surrounding country is about Openshaw, Droylsden, Newton, and Failsworth; and these also are the places of most rapid increase during the fifty years. The parts least densely peopled are about Urmstone, Stretford, Chorlton-cum-Hardy and Withington; at Moston; and at Barton-on-Irwell.

In the Bolton group, there are one town and eighteen country districts—the respective populations being 60,711 and 39,450. Here the proportion of country population is nearly two-fifths of the whole. In the Manchester group it is little more than one-eighth. There are, however, some parts of

the country about Bolton, as Kersley and Farnworth, more densely peopled than any similar district near Manchester. On the whole, the Bolton district is thickly inhabited; the only exceptions being at Over Hulton and Bradshaw, which do not include more than about one-tenth of the whole area.

In the group formed by Rochdale, Heywood, Bury and Radcliffe, and the sixteen country districts surrounding these, there is an aggregate town population of 74,153, against a country population of 83,821. Here there are one-ninth more persons in the country than in the towns. Some parts of the country, as Pilsworth and Ashworth, are but thinly peopled—having even lost instead of gained in that respect, since 1801. The rest of the country is well peopled.

In the Oldham and Middleton group, with two towns and twelve country districts, we have 52,560 persons in the towns and 54,552 in the country. The country about Royton is densely peopled; and about Tonge it is so much so as to suggest the existence of something very like a town. At Great Heaton there were fewer inhabitants in 1851 than in 1801; and the population is but thinly distributed over the townships of Alkington, Hopwood, and Thornham.

Stockport gives to its group a town population of 53,610 surrounded by ten country districts containing 14,135 persons. Here the country parts are, on an average, more thinly peopled than anywhere else in "the Manchester District." The inhabitants are fewest about Chadkirk and Brinnington, South Stockport, towards Bramhall, and about Offerton.

The Tame valley group, including Ashton, Staleybridge, and Hyde, and nine country districts, has in the three towns 74,651 persons, and in the country 40,148. This, as I have before observed, is the group of most rapid increase; the town population having increased tenfold, and the country population much more than doubled itself, in the fifty years in view.

The last group is one that might, perhaps, have been omitted, without impairing the completeness of "the Manchester District." Its towns are Leigh, Tyldesley and Atherton, having, in 1851, an aggregate population of 11,594. Around these are five country districts, containing a population

of 12,165. And as the latter are well, and nearly equally, inhabited, and the density of the town population is low, the general aspect of the group is much that of a densely peopled country district.

How the increase of population here shewn has been effected, is a question of some interest. Not by natural increase only, but also largely by immigration—by immigration from all parts of the United Kingdom, but chiefly from Ireland, and from the counties immediately adjoining. No attempt, space being deficient, can here be made to follow out this enquiry. But it may fitly form the subject of another paper.

The area before us is not of large extent, as compared with England and Wales. It is but as 222,000 acres to 35,000,000 (dry land), or as about 1 to 165. Yet its population is as 1 to 18.

The capital accumulated on the same ground probably now bears a much higher proportion to the number of persons using and enjoying it, than it did in 1801. And there is reason to believe, that if it has not all been actually saved on the spot, the amount imported from other localities has been more than balanced by that carried away.

The inducements under which men gather themselves together in this manner are various; but there can be no doubt that in the present age of the world the motive by far the most powerful is the industrial one; and that, as to the majority in number of the population so collected, it has been so in all ages of the world. It is a trite remark, that every successive step in civilization has been broadly marked by the additional power it has conferred upon men to live near each other. The hunter must needs have few near him; the herdsman cannot have many; and the farmer, with all modern improvements in agriculture, cannot on an average, raise the means of subsistence for more than one person to every five acres of cultivable land. In England and Wales there are nearly four acres of absolute area to each living person; but much of this is not, and never can be made cultivable. Yet all subsist; and many subsist in a style which necessitates the consumption of much capital and labour in forms not in any way conducive to the means of subsistence. We have in Great Britain, living in that degree of aggregation which is wholly inconsistent with agricultural industry, a proportion of our population, probably not less than four times as great as is similarly

placed on any like area in Europe, or in the world, though there are several extensive areas of similar character; and the explanation is nowhere more obvious than in the life of the Manchester district. We are doing the "town-population" work of more than half the world, in addition to our own. We are finding the capital and labour, and taking the profits of this town industry. And we are also wielding the power, social and political, and incurring the corresponding responsibilities of this position. Our towns, for any merely British purpose, are enormously in excess. Our country districts are, for the most necessary and imperative of British purposes, equally deficient. Our very being as a nation has come at length to hang upon the means of communication with those "country districts" abroad, in which the consumers of our exported produce live, and from the soil of which they raise the means of paying for what of ours they consume. Very well known is all this, but yet not always sufficiently remembered. And if in thus analysing, and casting into a new form, for a local purpose, a portion of the statistical material presented to us by the census of 1851, I shall have induced any additional attention to the phenomena now unfolding themselves in the growth of our town-population, I am quite sure that I shall have done good service.

TABLE I.

MANCHESTER DISTRICT.

TWENTY-ONE COUNTRY DISTRICTS AROUND THE TOWN OF MANCHESTER.

	Area.	Population.		Alteration.			Density ℘ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℘ ct.	1801.	1851.	Altn.
Urmstone	974	532	730	198	—	37	350	480	130
Stretford (pt.)	2,790	1,177	*2,498	1,321	—	112	270	573	303
Chorlton-cum-Hardy	1,265	513	761	248	—	48	260	385	125
Withington	2,498	743	1,492	749	—	101	190	382	192
Levenshulme	605	628	1,902	1,274	—	203	664	2,012	1,348
Rusholme (pt.)	*356	300	1,200	900	—	300	539	2,157	1,618
Gorton	1,429	1,127	4,476	3,349	—	297	505	2,005	1,500
Openshaw (pt.)	*321	189	1,259	1,070	—	566	377	2,510	2,133
Droylsden	1,611	1,552	6,280	4,728	—	305	617	2,495	1,878
Newton (pt.)	*735	*495	3,001	2,506	—	506	431	2,613	2,182
Failsworth	1,064	2,622	4,433	1,811	—	69	1,577	2,666	1,089
Moston	1,271	618	904	286	—	46	311	455	144
Blackley	1,764	2,361	3,503	1,142	—	48	857	1,271	414
Crumpsall (pt)	*508	*300	*750	450	—	150	378	945	567
Prestwich	1,906	1,811	4,096	2,285	—	126	608	1,375	767
Broughton (pt.)	*360	*250	*1,000	750	—	300	444	1,778	1,334
Pendleton	*1,000	*900	*3,000	2,100	—	233	576	1,920	1,344
Pendlebury	930	437	2,750	2,313	—	528	301	1,892	1,591
Clifton	820	812	1,647	835	—	103	634	1,285	651
Worsley	6,240	5,062	10,189	5,127	—	101	519	1,045	526
Barton-on-Irwell (pt.)	*10,205	*4,197	*8,579	4,382	—	104	263	538	275
							Density ℘ Acre.		
	38,648	26,626	64,450	37,824					
Town of Manchester	9,785	94,409	404,808	310,399	—	329	9.68	41.37	31.72
	48,433	121,035	469,258	348,223					
Town of Eccles	325	2,000	4,108	2,108	—	105	6.16	12.64	6.48
	48,758	123,035	473,366	350,331					

* Estimated.

TABLE II.

EIGHTEEN COUNTRY DISTRICTS SURROUNDING BOLTON.

	Area.	Population.		Alteration.			Density ℘ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℘ ct.	1801.	1851.	Altn.
Over Hulton	1,300	619	452	—	167	—27	305	222	—83
Little Hulton	1,470	1,498	3,184	1,686	—	113	652	1,386	734
Middle Hulton	1,280	819	888	69	—	8	410	444	34
Kersley	900	1,082	4,236	3,154	—	291	769	3,012	2,243
Farnworth	1,450	1,439	6,389	4,950	—	344	635	2,820	2,185
Great Lever	770	398	713	316	—	79	331	593	262
Rumworth	1,300	700	1,386	686	—	98	345	682	337
Halliwell	2,320	1,385	3,959	2,574	—	186	382	1,092	710
Little Bolton (pt.)	*600	*187	580	393	—	210	199	619	420
Sharples	3,920	873	3,904	3,031	—	347	143	637	494
Bradshaw	1,380	380	853	473	—	124	176	396	220
Harwood	1,100	1,281	2,057	776	—	61	745	1,197	452
Ainsworth	1,296	1,240	1,781	541	—	44	612	880	268
Breightmet	970	734	1,540	806	—	110	484	1,016	532
Tonge } Haulgh (pt.) }	*880	*958	*1,926	968	—	101	697	1,401	704
Darcy Lever	540	589	2,091	1,502	—	255	698	2,478	1,780
Little Lever (chap.)	1,020	1,276	3,511	2,235	—	175	801	2,203	1,402
							Density ℘ Acre.		
	22,496	15,458	39,450	24,159					
Town of Bolton	1,820	17,429	60,711	43,282	—	248	9.58	33.36	23.78
	24,316	32,887	100,161	67,441					

* Estimated.

TABLE III.

SIXTEEN COUNTRY DISTRICTS SURROUNDING ROCHDALE, HEYWOOD, BURY, AND RADCLIFFE.

	Area.	Population.		Alteration.			Density ℔ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Castleton (pt.) ..... Butterworth ..... Spotland (pt.) ..... Wardleworth ..... Wuerdle with Wardle.... Blatchinworth with Calderbrook	34,210	18,077	43,320	25,243	—	140	338	810	472
Heap (pt.)	*2,184	*1,483	3,854	2,371	—	160	435	1,129	694
Pilsworth	1,478	418	373	—	45	—11	181	162	—19
Lower Tottington	5,038	4,314	10,691	6,377	—	148	548	1,358	810
Elton (pt.)	*2,171	*1,800	*3,500	1,700	—	94	531	1,032	501
Pilkington	5,378	5 786	12,863	7,077	—	122	689	1,531	842
Radcliffe (pt.) (P).....	*2,103	*650	1,291	641	—	99	198	393	195
Bury	*1,250	*500	1,000	500	—	100	256	512	256
Walmerston-cum-Shuttle-worth	5,056	2,166	4,802	2,636	—	122	274	608	334
Ashworth	1,022	295	277	—	18	—6	185	173	—12
Birtle-cum-Bamford	1,388	753	1,850	1,097	—	146	347	853	506
Country.....	61,278	36,242	83,821	47,642			Density ℔ Acre.		
TOWNS.									
Rochdale.....	1,130	8,500	29,195	20,695	—	243	7.52	25.83	18.31
Heywood.....	750	2,800	12,194	9,394	—	335	3.73	16.26	12 53
Bury.....	1,470	6,852	27,762	20,910	—	305	4.66	18.89	14.23
Radcliffe	363	1,847	5,002	3,155	—	171	5.09	13.78	8.69
Towns	3,713	19,999	74,153	54,154					
Total	64,991	56,241	157,974	101,796					

* Estimated.

TABLE IV.

TWELVE COUNTRY DISTRICTS SURROUNDING OLDHAM AND MIDDLETON.

	Area.	Population.		Alteration.			Density ℔ sq. ml		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Crompton	2,864	3,482	6,375	2,893	—	83	778	1,425	647
Royton	1,352	2,719	6,974	4,255	—	156	1,287	3,301	2,014
Oldham (pt.)	*2,300	*3,000	*6,000	*3,000	—	100	835	1,670	835
Saddleworth	18,280	13,665	17,799	7,134	—	67	373	623	250
Alkrington.....	788	319	373	54	—	17	259	303	44
*Great Heaton	866	267	150	—	117	—44	197	111	—86
Little Heaton	509	494	800	306	—	62	621	1,006	385
Middleton (pt.)	*1,508	1,500	2,977	1,477	—	98	637	1,263	626
Tonge	367	711	3,831	3,120	—	439	1,240	6,681	5,441
Hopwood	2,043	948	1,575	627	—	66	297	493	196
Thornham	1,908	674	1,510	836	—	124	216	484	268
Chadderton	2,978	3,452	6,188	2,736	—	79	742	1,330	588
Country	35,853	28,231	54,552	26,438			Density ℔ Acre.		
TOWNS.									
Oldham	2,317	9,024	46,820	37,796	—	419	3.89	20.21	16.32
Middleton	400	1,765	5,740	3,975	—	225	4.41	14.35	9.94
Towns	2,717	10,789	52,560	41,771					
Total	38,570	29,020	107,112	94,609					

* Estimated.

TABLE V.

TEN COUNTRY DISTRICTS SURROUNDING STOCKPORT.

	Area.	Population.		Alteration.			Density ℔ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Burnage	658	383	563	180	—	47	373	548	175
Didsbury	1,527	619	1,449	830	—	134	259	607	348
Heaton Norris (pt.)	*1,583	*1,068	2,037	969	—	91	432	824	392
Reddish	1,541	456	1,218	762	—	167	189	506	317
Werneth	1,560	1,152	3,635	2,483	—	216	473	1,491	1,018
Romiley (or Chadkirk)	2,290	825	1,364	539	—	65	231	381	150
Bredbury	2,521	1,358	2,991	1,633	—	120	345	759	414
Brinnington (pt.)	*683	*140	301	61	—	40	131	188	57
Stockport (pt.)	*500	*150	*225	75	—	50	192	288	96
Offerton	730	351	352	1	—	0	308	309	1
	13,593	6,502	14,135	7,533			Density ℔ Acre.		
Town of Stockport	2,155	18,880	53,613	34,730	—	184	8.76	24.88	16.12
Total	15,748	25,382	67,745	42,263					

* Estimated.

TABLE VI.

NINE COUNTRY DISTRICTS SURROUNDING ASHTON-UNDER-LYNE, STALEYBRIDGE, AND HYDE.

	Area.	Population.		Alteration.			Density ℔ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Ashton-under-Lyne (part of Parish)	*7,675	*10,832	20,356	9,524	—	88	903	1,697	794
Staley (T.)	*2,520	*955	*1,800	845	—	88	243	457	214
Dukinfield	*790	*300	1,200	900	—	300	243	972	729
Matley	700	285	252	—	33	(—12)	261	230	—31
Newton	868	1,005	7,481	6,476	—	644	741	5,516	4,775
Godley	639	270	1,353	1,083	—	401	270	1,355	1,085
Hyde (pt.)	*239	*200	1,518	1,318	—	659	536	4,065	3,529
Denton	1,647	1,362	3,146	1,784	—	131	529	1,222	693
Haughton	1,130	1,139	3,042	1,903	—	167	645	1,723	1,078
Country	16,206	16,348	40,148	23,833			Density ℔ Acre.		
The Towns of Ashton-under-Lyne	1,525	4,837	40,723	35,886	—	742	3.17	26.70	23.53
Staleybridge	1,240	1,500	23,877	22,377	—	1,492	1.21	19.25	18.04
Hyde	650	863	10,051	9,188	—	1,065	1.33	15.46	14.13
Towns	3,415	7,200	74,651	67,451					
Total	19,613	23,538	114,799	91,284					

* Estimated.

TABLE VII.

FIVE COUNTRY DISTRICTS SURROUNDING LEIGH, TYLDESLEY, AND ATHERTON.

	Area.	Population.		Alteration.			Density ℔ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Bedford (pt.) Pennington West Leigh	*5,384	*4,473	*8,501	4,028	—	90	532	1,011	479
Tyldesley-cum-Shackerley (pt.)	*2,194	1,200	1,789	589	—	49	350	522	172
Atherton (pt.)	*2,073	1,140	1,875	735	—	64	352	579	227
Country	9,651	6,813	12,165	5,352			Density ℔ Acre.		
Towns of									
Leigh	385	700	5,206	4,506	—	644	1.82	13.52	11.70
Tyldesley	280	1,899	3,608	1,799	—	99	6.46	12.89	6.43
Atherton	250	2,109	2,780	671	—	32	8.44	11.12	2.68
Towns	915	4,718	11,594	6,976					
Total	10,566	11,531	23,759	12,328					

* Estimated.

THE ENGLISH POOR-LAW SYSTEM, VIEWED IN RELATION TO EDUCATION AND MORALS, IN ENGLAND AND WALES.

By the Rev. Thomas Moore, M.A.,

CHAPLAIN OF THE WEST DERBY UNION.

(READ DECEMBER 13TH, 1856.)

The subject of the following sketch is the bearing of the English Poor-Law on the Education and Morals of the people. Its importance will appear from a variety of considerations, of which it may be sufficient to mention, the number of the pauper class, the expense of their maintenance, and the great influence for good or evil, which they may exercise on the community at large.

Number.—To shew the number, we have but to refer to the Official Returns, and we find that there were in receipt of relief—

	In-door.	Out-door.	Total.
July 1st, 1853 ..	96,420 ..	670,660 ..	767,080
Jan. 1st, 1854 ..	110,739 ..	695,387 ..	806,126

Of the above, there were under the age of 16 years—

	In-door.	Out-door.	Total.
July 1st, 1853 ..	35,911 ..	235,749 ..	271,660
Jan. 1st, 1854 ..	45,431 ..	258,747 ..	304,178

In may not be unimportant to remark, that in 1853 the in-door pauper children were nearly 37 per cent. of the in-door paupers, and the out-door pauper children above 30 per cent. of the whole out-door relief list. On the 1st of January, 1854, the in-door children were 41 per cent. and the out-door 37 per cent. of their respective totals. The children are composed in the main of two great classes—the orphans and the illegitimate. In the years 1853, 1854, they formed when taken together, 78 per cent. of the whole, as out of 35,911 in the former of those years, there were nearly 22,000 orphans and upwards of 6000 illegitimate; and in the latter

year, out of 45,431, there were upwards of 23,000 orphans and nearly 12,000 illegitimate.

Expense.—Having thus stated the numbers relieved, we next proceed to the expense of their maintenance. There was levied for poor-rates—

In 1852 .. £6,552,298
In 1853 .. £6,522,412

The expenditure in each of these years was somewhat greater.

It is instructive to compare these rates with those of 1834, the year immediately preceding the passing of the Poor-Law Amendment Act. In that year the rates were £8,338,079; and allowing for the increase of population since then, the levy for poor-rate would at the same proportion have been in 1853, £10,720,387, but it was actually only £6,522,412, or a decrease of nearly 40 per cent. This result is satisfactory, as it proves that a great saving has been effected by the introduction and working of the New Poor-Law system.

Influence of the Pauper Class.—The influence which such a large class as the pauper one exercises on the community, must be sensibly felt; and those best acquainted with the subject have stated that under the old system, crime recruited its ranks largely from the inmates; and it is only too much to be feared that modern workhouses are not altogether free from the same defect. That a great change for the better has taken place in the condition of the pauper class, by the new system, is evident to anyone who glances at the reports of the state of the poor before, or for a few years after the passing of the Act, and who contrasts their present condition with such description. As the present paper does not propose to treat the subject fully and in detail, the writer intends to confine himself to one branch of it, viz., the means employed for training the young to be useful citizens.

Adults and Children differently regarded.—The feelings with which the adult pauper and the pauper-child are regarded are very different, and rightly so. The condition of the former is regarded with suspicion; and though poverty is not a crime in itself, yet it so often arises from crime, and from controllable causes, that the pauper is looked upon as guilty of criminality to some extent; and hence severe tests are often applied to ascertain the reality of the destitution. But the orphan, the child of

destitute parents, and the illegitimate, ought to be, and are generally regarded in a different light; and self-interest, as well as reason and right feeling, point the way to a very different mode of treatment. It is not meant that all adult paupers are to be regarded in a suspicious light. It is generally the able-bodied who are so, but the old and infirm always meet with sympathy and attention.

Poor-Law; its object.—The object of the poor-law is, while it aims at relieving cases of real distress, to diminish as much as possible the pauperism of the country. This it attempts to do by detecting unworthy applicants for parochial relief, while at the same time it endeavours to de-pauperise those who have sunk into that pitiable condition from whatever cause. In England this is no easy task to accomplish, as it is at once the richest and the poorest country in the world; and while some of its people arrive at the extreme of wealth and luxury, there are others who feel an extent of hardship and distress unknown in any other country.

Workhouse Test.—To diminish pauperism by detecting unworthy applicants, is a use which is made of the workhouse. If persons can readily get parish relief, and remain at their own homes and have their freedom, they will apply for it. In such cases, the offer of the workhouse often removes the application, as in general nothing further is heard of the case. If relieving officers, whose duties are most onerous and responsible, are not careful and conscientious, cases of hardship may occur in really deserving cases, where a little temporary relief would remove the distress, whereas the offer of the house would, if accepted, make paupers of those who never desired to be so.

Pauper Children.—The children may be divided into two classes—the in-door and out-door relief list. From what has been already stated, it will be seen that there is a great disparity between them, the numbers being in 1854, 45,431 and 258,747 respectively. From this it is seen that about 15 per cent. only of the pauper children are maintained in the workhouse.

Education.—For the educational purposes connected with workhouses, England and Wales are divided into five districts, viz., the Metropolitan, the Southern, the Eastern and Midland, the Northern and the Western including Wales, and over each of these there is a Government Educational Inspector. In the case of children, the problem to be solved, is to

give them such training as will fit them for the active duties of life, and make them useful citizens—in a word, to raise them permanently from the pauper class. Anything which falls short of this is comparatively thrown away; as those who have not been fitted for honest occupations, will soon find those who will indoctrinate them in pursuits congenial to man's evil and degrading propensities, and make them the pest of society.

Schools.—For the training of the children, there are schools attached to most workhouses, and the necessary officers to take charge of them. The law provides that every child shall have three hours' instruction daily, and the remainder is supposed to be given up to industrial occupations of various kinds. Wherever land is attached to workhouses and is cultivated by the boys, it is found beneficial in its influence on health and character.

Industrial Schools.—Another plan has been much approved of, and has been adopted in the Metropolitan and Northern districts chiefly, and with marked advantages. I refer to District, or as they are sometimes called, Industrial Schools. In these the children are entirely removed from the adults, and the whole establishment is devoted to the training of the young. District Schools are usually intended for the education of the children of several parochial unions, but sometimes a single parish has one of its own. Of the latter Liverpool is an example; and of the former Swinton, which is intended for Manchester, Bury, Rochdale, Barton and Prestwich.

Teachers.—The Committee of Council on Education have devoted particular attention to the improvement of workhouse teachers, and pays their salaries according to their merits. Boards of Guardians are thus induced to have properly qualified teachers; whereas, had the various Unions to pay the teachers, it is quite clear that the education in most cases would be greatly neglected.

School Books.—Workhouse schools have a great advantage in being able to obtain grants of books at a cost much more moderate than is practicable for National Schools, and hence there is every inducement to have the schools well supplied with the best class of school books.

Chaplain.—It it further provided that the schools be catechised monthly by the Chaplain; and in those Unions which have a Chaplain who undertakes no other clerical duty, it is expected that the Schools should have his special attention.

Results.—The machinery at work for the improvement of the pauper children, as thus slightly sketched, seems capable of producing the very best results, and without doubt it has been productive of great benefits. But to any one at all familiar with the subject practically, or who has paid any attention to the Poor Law Reports, it will be evident that the results are by no means commensurate with the machinery employed.

I shall now endeavour to put before you the reasons why schools in workhouses have not been so successful as might have been expected.

Want of Success.—1. *In the first place, the system has not been adequately carried out.* It has been stated above that there were only 15 per cent. of pauper children brought up in the workhouses. The mass of pauperism is thus untouched; and were even the greatest success to be obtained with those who are maintained in the workhouses, but a small portion of the proposed object would be accomplished. The expense of in-door relief of all the poor, adults and children, was for the year ending March 25, 1853, £762,718, while the out-door relief was £2,775,556. The great disproportion in the amount of the out-door relief is caused by the want of workhouse accommodation. It is impossible therefore to offer the workhouse to the bulk of the applicants, in order to distinguish real from pretended distress, and much expense is often incurred through this inability. It is to be feared that the majority of the out-door children are greatly neglected. In some cases, the Guardians endeavour to make the sending of their children to school, the condition of granting the relief. If this rule were invariably acted upon, much advantage would result; but from the character of those who in general are thrown upon the parish, it is not to be expected that the education and correct training of their children would be a primary or even a prominent object; and it is far more likely that the condition, where it is attempted to be imposed, is evaded rather than conscientiously carried out. Even when accommodation is provided for the education of children, it is not always taken advantage of. A striking instance of this is the following:—Swinton is a large Industrial School, built for the use of several Unions, already mentioned, and yet in 1852 (and the numbers in the later returns have diminished, except in the cases of Barton and Manchester),

Bury sent	only	71	out of	88,797	population
Rochdale	„	37	„	72,522	„
Barton	„	81	„	31,584	„
Prestwich	„	14	„	41,448	„

Of these Barton, which happens to be the nearest to Swinton, educates 1 in 1000, whereas Prestwich sends scarcely more than 1 in 3000. If Rochdale equalled Manchester in population, it would educate at its present rate only 95, whereas Manchester had at Swinton 637, exclusive of those educated in the Manchester workhouse. Manchester, when compared with these other Unions, does its duty well, and yet altogether it educates considerably less than 1 in 200 of the population.* It is surprising, however, that men so enlightened should permit the children who are retained in the workhouse, to be under the management of their fellow paupers, when competent teachers could be obtained, with the help of government, at so slight an expense. The Select Vestry of Liverpool educate somewhat more than 1 in 200, and stand at the head of pauper education, at least in the Northern District. It is laid down by competent authority, that every Board of Guardians in the country should educate *one per cent.* of the population to produce a sensible effect on pauperism and crime. If this be a fair proportion to take, it is evident, from the instances adduced, that even in the most favorable cases which can be selected, scarcely more than one-half are under proper training. The difference between Manchester and Rochdale which is so striking, and that, too, in populations so nearly alike in character, is accounted for by the fact that at Rochdale there is very little workhouse accommodation, and hence the number receiving in-door relief is small.

2. *In the second place, it will be well to enquire how far education in workhouses secures the desired end.* Workhouses are intended for several classes of inmates, and ought to be so constructed as to admit of a good classification in order to keep the vicious from the virtuous. But the houses, in which anything like a sufficient classification exists, are few indeed. We may divide inmates into three general classes:—(1) Those not able-bodied, i.e. old and infirm. (2) The able-bodied. (3) The children. It is in the able-bodied class of men and women that the greatest necessity

* These facts are derived from the Reports of T. B. Browne, Esq., her Majesty's Inspector of Workhouse Schools for the Northern District.

arises for a proper classification, and where the greatest difficulty is found in obtaining it. In the able-bodied class you have the boy of 16 and the various stages of manhood; and similarly with the females. The generality of this class is decidedly vicious and depraved in its habits. Their evil influence in a workhouse is felt in many ways, of which the following are examples. When, as sometimes happens, boys or girls have not been provided with situations before the age at which school education terminates, they are removed into the able-bodied class. They there meet with such contamination that in many cases the ruin of such persons can be distinctly traced to such intimacies. If, again, boys or girls who have been put in situations, become temporarily unable from sickness to remain at their employments, they return to the workhouse, and when recovered, they are exposed to the most imminent danger, if there is any delay in providing them with fresh situations. The society into which they are thrown consists of those who are familiar with crime, and to whom a prison is a sort of second home. On the female side is to be found the fallen woman, and those who come to give birth to illegitimate children.

In well regulated workhouses, the children are separated from the adults. But even when the principle of classification is carried out most strictly, the evil is not fully met or remedied. As long as they are in the same building, stone walls, or the utmost vigilance on the part of officers, will not keep them separate. But more prejudicial than all is, I consider, the low state of moral feeling in a workhouse. The thoroughly pauper element is too strong, and influences everything. The daily communication between parents and children, which the law provides for, leads frequently to much mischief, for the truth cannot be disguised, that the less such parents see their children, the better. Masters of workhouses complain much of irregularities in discipline to which it gives rise, and the teachers have ascribed the origin of much evil in the children, to this cause. Pauper children are more affected by the sayings and doings of their own class than by the influence of a superior one. The vicious deeds and habits of the inmates become known and are talked of by the boys and girls; familiarity with crime is the result, and a disposition to remain contentedly in a pauper condition. Boys and girls put out to situations often make excuses to return to what they consider their home, or take advantage of the first difficulty, and leave their places. Workhouse children are more

liable, perhaps, than others to be found fault with by their mistresses, as they are less accustomed to household matters, and they will not bear rebuke, and hence return to the place where they have been brought up. Besides, it sometimes happens that intimacies made in the workhouse with the regular inmates are so strong in their influence, that excuses are eagerly sought for to return again. Hence it is seen that a feeling of independence has not been produced, but that rather the pauper feeling is made deep and lasting. If the tone of feeling be low in a school, and decidedly in favour of pauperism, however energetic the teachers and other officers may prove themselves, and however well qualified for their posts, their efforts will be to a considerable extent inappreciable. The important influence of the general tone of feeling in a school, is seen in the remarkable example of the Rugby School under Dr. Arnold; and what was true in that case, will, I think, be found to prove universally true.

3. *A third difficulty is the position of the Schoolmaster in Union Schools.* —His position is peculiar. He is not merely a teacher, as is the case with National Schoolmasters, but he finds he has other laborious and often irksome duties to discharge. The children are constantly under his care, and from six a.m. to eight p.m. he has scarcely a moment he can call his own. He has to see to the cleanliness of the children and of the schoolroom, take charge of their clothing, give it out weekly and see that it is returned. Self-improvement is nearly out of the question. But it is not merely the laborious nature of his duties which makes his situation disagreeable, but also his position with regard to the Master of the workhouse. This latter circumstance does not necessarily produce unpleasantnesss, but it has done so, in so many cases, that it cannot be omitted from the number of the Teacher's difficulties. The Master is responsible for the good management of the entire house. To the Schoolmaster is confided the childrens' department; and unhappily the never-ending complaint is, that these two officers are on bad terms. Though it cannot be supposed that the Teacher is without fault, yet such differences have been almost invariably ascribed to improper and uncourteous interference on the part of the Master; and such conduct is accounted for by the fact that Masters' situations are in general not such as to secure men of good standing or proper qualification. There is no officer who can exercise so great an influence on the well-being of the house as the Master. His salary should

be good, and men of mark should be selected for the office. Were this the case we would hear of fewer complaints. This evil is remarkably illustrated by the case of Kneller Hall. By a Minute dated 21st December, 1846, a scheme was embodied for "Normal Schools for Training [School] Masters for Workhouse and Penal Schools," and as a part of this, Kneller Hall was established. But after the experiment of a few years, it has been closed. The chief difficulty was to meet the peculiar requirements of workhouse teachers, of whose duties teaching forms but a part. The Kneller Hall men were sent out prepared in the best manner, and were naturally proud of their acquirements, but they had no preparation for that portion of a workhouse teacher's duty which is peculiar to him, and hence discontent was the natural and necessary consequence, and the establishment had to be given up.

4. *Incompetent Teachers.*—Another difficulty is when the salary is small, and only incompetent persons are induced to become candidates. From these and other causes the fluctuation of Teachers is very great, and the consequences are always most injurious. It is only when the Master and Teachers act in harmony, and when the Teachers remain for any length of time, that Schools can make healthy progress; and it is precisely in such cases, and in no other, that the Government Inspector gives a favorable report.

5. *Discouragement of Teachers.*—Workhouse Teachers have fewer encouragements than any other. As a rule, the Guardians are so occupied with relief and the general business of the Union, that they take little practical interest in the Schools. The Teacher's work is little noticed, and it is possible that however zealous and conscientious he may be, the minds of the Guardians may receive a wrong bias towards him. He is not, however, without encouragement; but his chief support is a strong sense of duty, and the earnest persuasion of the importance of the position which he holds, as affecting the temporal and eternal interests and well-being of those who are committed to his trust.

6. *Another element of the want of success* is the small number of inmates in a majority of the workhouses—for it is almost as expensive to get a proper staff of officers for a small workhouse as for a large one. The condition of the small Unions is very backward, and there is scarcely an instance of a good report in such cases. Out of the 140 workhouses in

the Northern District, there are 93 where the number of boys is under 20; 23 where it is under 30; and only 21 where there are 40 boys and upwards. There are four with 100, viz, Newcastle-upon-Tyne, Liverpool, Preston and West Derby. The proportion is much the same in the other districts as in the Northern.

7. *Providing situations for the children.*—If boys and girls have not the prospect of obtaining situations when they are ready for them, the influence on the Schools is injuriously felt. They lose hope, and have nothing to stimulate them to exertion. Were this matter attended to systematically, it would tend strongly to promote exertion and a feeling of independence. In cases where Schools obtain a good character, and where there is a steady demand for boys and girls, a healthy state and tone are generally found to exist.

8. *Industrial Training defective.*—In towns this can hardly be carried out in an efficient manner, as only in-door occupations can be pursued; and in country places, where land may be had in abundance, it is generally neglected. Wherever the cultivation of land is a portion of the industrial training, a good effect is almost invariably produced.

9. *Inferior physical condition of the children.*—As you descend in the social scale man's physical and mental energies seem to degrade, and hence this inseparable concomitant of pauperism is to be added to all the other difficulties in the way of reclaiming the pauper child.

Having said so much of the difficulties and imperfections in the way of Pauper Education, it remains to say a few words as to the method by which it might be improved. I have not left myself sufficient space to enter fully into this question; and, indeed, for its full and proper discussion it would require a separate paper. From what has been already said, the nature of the remarks which I am about to make will be readily anticipated.

Suggestions.—The evil influence which workhouses are calculated to have upon the bringing up of youth has been set forth, not indeed with all the power of which the subject is capable, but still, perhaps, after a manner sufficient to shew the great necessity which exists for a complete separation of the children from the adults. The net-work of pauperism, in whose meshes children are entangled, and from which they find it next to impossible to

extricate themselves, would to a great extent be broken through; and the complete separation of children from adults could be effected at a much less expense of feeling than is generally imagined. If we remember that the orphans and illegitimate children constitute 77 per cent. of the whole, we shall see that the great bulk has no one particularly interested in looking after them. I am persuaded also that the separation of the dissolute pauper parents and their children should be *insisted on*, if the children are to be reclaimed. It is repugnant to our natural feelings to propose such separation, but experience goes to shew that unless it be adopted the work will never be effectually accomplished.

The complete separation, and the formation of District Schools would obviate most of the difficulties noticed here. The tone of the School would not then be taken from the contaminating influence of adult paupers; the position and pay of the Schoolmaster would be better, and a superior class of men would present themselves. The head of the establishment should be a man of educated and enlarged mind. The industrial training could also be fully carried out.

Suggestions illustrated.—As practical illustrations of what is here advanced, I may refer to the Kirkdale Industrial Schools and to those at Swinton. These have been productive of great good, and have raised hundreds from the pauper class to be useful and industrious members of the community. The population of a great number of Unions is so large, that they would each require such a School for the training of the whole of the pauper children. If the smaller Unions were to unite throughout the Kingdom, and to form District Schools, and if they were put under good management, the best results might be looked for. Good management is, however, as important as the formation of districts, for we have an example in Leeds of how little an Industrial School may accomplish, through bad management.

In the management of District Schools valuable hints might be derived from the family system, as practised at Mettray, for the reformation of juvenile offenders.

It would not be difficult to point out other examples, both at home and abroad, in confirmation of *the principle of separation*, the necessity of which is strongly shewn by the various facts and statements adduced in this paper. It is beginning to be more extensively acted upon, but until

it be more generally adopted and until the majority of pauper children are brought under the influence of sound education and judicious training, the results most desired will not be produced. Gradual improvement is all but certain, for the cause of education will not in the present day be lost sight of; and the prominence which it has attained is no more than its importance demands. But though educational subjects have been much discussed, and the instruction in schools much improved in consequence, we are yet far from that degree of excellence at which it is quite possible to arrive. It is earnestly to be hoped that England will not rest satisfied till she secures the first place among the nations in the training of her labouring population, and in the enlightened treatment of her poor.

Workhouses may be improved.—Even without resorting to District Schools, the condition of workhouses might be materially improved. This could be accomplished by raising the standard of workhouse Masters to be the same as that in prisons. If an educated and thoroughly competent person filled this important office in every case, much might be done to de-pauperise both adults and children. Attention to classification is also of great importance.

But, after all, I am persuaded that nothing would tend so effectually to do so, as THE COMPLETE SEPARATION OF THE CHILDREN FROM THE ADULTS; AND DISTRICT OR INDUSTRIAL SCHOOLS UNDER A GOOD SYSTEM OF MANAGEMENT.

ON A FUNGOID DISEASE AFFECTING THE PEAR TREE.

By Thomas Sansom, A.L.S., F.B.S.E., &c.

(Read 20th December, 1855.)

The Historic Society of Lancashire and Cheshire having lately extended its field of operations, and included under the general term "Science" all subjects connected with Botany and Natural History, I offer no apology for bringing before the members the subject of the present notice. I am induced to do so as I consider, first, that all questions relating to Natural History are acceptable; and, secondly, that when those subjects have any bearing upon the cultivation or domestic use of the vegetable kingdom, their value is greatly enhanced. In the present instance, I fear I shall not be able to throw much light on the peculiar formation I have brought under notice, but I lay before the Society the little I have been able to acquire, in the hope that it may lead to further observations, by botanists better able to investigate the subject than I am.

In the garden of Mr. Edward Higgin, at Walton Breck, near Liverpool, are several pear trees. Three of these trees have suffered from a disease, to such an extent as to render the fruit unfit for food. As the disease did not make its appearance to any extent until after the fruit was gathered, Mr. Higgin supposed his gardener had bruised the fruit in collecting it; but upon further investigation, he found such was not the case, as all the pears had been picked by hand and housed with great care. When the fruit was first gathered it appeared perfectly sound, and it was not until several days after it had been deposited in the store-room, that a change took place. It soon became apparent, however, that a large portion of the fruit of three of these trees was rapidly decaying, whilst the fruit of the other trees remained perfectly sound. Upon a more careful examination of the pears, Mr. Higgin discovered, in every one, a nucleus from which the disease appeared to spread, thus confirming him in the opinion that the decay arose from some peculiar disease, and was not accidental.

Mr. Higgin, in forwarding specimens to me for microscopical examination, states that Tree No. 1, a *Maria Louise*, is a well-grown tree four or five years old, growing against the end of his stable, on a brick wall facing nearly south. It was barren until last year, when it produced a large crop, which was gathered in October, the fruit remaining in perfection until Christmas. This year it had only thirty-nine pears, which duly ripened and were gathered in October, immediately after which, part became infected. He is not aware that any showed signs of the disease until a day or two after being placed in the store-room.

Tree No. 2. *Jalousee de Fontenoy Vendee* is a dwarf standard, growing in the open garden, (near a hotbed frame, heated by manure from the stable). It was purchased last year from Davis's Nursery, Green Lane, West Derby, and bore a large crop for so small a tree. On it, two of the pears were diseased before being gathered, and before the fruit became mellow and ripe, each pear became rotten.

Tree No. 3. *Nelis D'Hiver*, a new dwarf tree similarly purchased, also in the open garden. It bore perfectly. None of the fruit became ripe before it was diseased.

None of these trees had liquid or other manure. The garden is three years old, the soil is good loam with eighteen inches of yellow clay, and sand-stone rock below.

I have examined the fruit sent to me by Mr. Higgin, and I find it affected by a fungus, to a very considerable extent. I received some of the specimens of the *Maria Louise* apparently sound; I have therefore been able to trace the progress of the disease, and in the following observations I shall confine my remarks to this tree.

In the fruit, the disease first makes its appearance in the shape of a small thickened spot, rather darker than the natural color of the pear: this gradually becomes black and ultimately cracks. From this time a slight swelling takes place around the spot, which assumes a reddish appearance. This increases very rapidly, until the greater part of the pear is absorbed, giving the whole fruit a soft and shrivelled appearance. If a section be made through the decayed part, it is found that decomposition extends a considerable distance into the heart of the fruit, and that it is very watery in appearance. On placing a section under the microscope, the cause of this rapid decay becomes apparent, the whole of the diseased part being

interwoven with the filaments or mycelium of a fungus, which ramifies through the tissue in every direction, until the whole of the cellular part of the pear becomes decomposed apparently to afford nourishment to the fungus.

The mycelium consists of long and very thin filaments, frequently branched, its size varying from $\frac{1}{1000}$ to $\frac{1}{2000}$ of an inch in diameter; it is often mixed with sporidæ, which are generally much broken up or dispersed in making a section for examination, but when found entire they are ranged in long rows, and when ripe assume a dark color. The plant appears to be a species of Penicillium, or is very nearly allied to that genus.

Figure 2 represents a portion of the mycelium of the plant as seen pervading the cellular tissue of the pear. (A) the mycelium in its natural state magnified 400 diam. (B) the granular contents of the articulations, and (C) the remains of the cellular tissue of the pear.

On examination of sections made through the dark spot or eye, it would appear that this is the principal seat of the fungus, and that at this spot the plant is more fully developed, and produces fructification, as shown in figure 3.

It having been supposed that in the potatoe disease the fungus first attacks the leaf and is thus communicated to the tuber through the vessels of the plant, I have endeavoured to discover traces of this fungus in the leaves of the tree, and also in sections of the branches and roots, but without success; the disease not having been observed before the autumn, it is impossible to trace its cause with certainty so late in the season.

It appears certain that the fungi are capable of multiplying by their filamentous matter, as well as by spores. This is partly proved by the common mushroom *(Agaricus campestris)* which is commonly cultivated from what is called the spawn. This spawn consists of the filamentous matter. M. Audouin found that he could as readily inoculate caterpillars and other larvæ with minute portions of the spawn of fungi as by its spores. It is believed that there is a filamentous spawn to all fungi, although seldom seen by observers, as it is developed out of sight, under ground, in the midst of decaying matter, on which fungi generally grow, or occasionally through the substance of living matter. It would appear that for the filamentous growth darkness is necessary, and that for the growth of spores

a certain quantity of light is requisite. In the present case the bulk of the fungus consist of filamentous matter.

It is curious to observe the great similarity between the present disease and several that have lately been investigated by botanists; and a study of these may, to some extent, assist us in understanding our present subject. In the potatoe disease particularly, and also in the disease which the vines, in almost all the wine-growing countries of Europe, have fallen a prey to, fungi very nearly allied to that found in the pear form a very prominent feature, and their presence is considered by some to be the sole cause, and not the effect of the disease.

In the former disease, as you are aware, the root of the potatoe, after reaching perfection, and sometimes before, is found to be covered with spots or apparently slight abrasions of the skin. These rapidly enlarge, the tuber becomes soft, and ultimately putrefies. The Rev. M. I. Berkeley attributes this disease entirely to a fungus which he believes first attacks the leaves; and so rapid is its development, that the period for examination of its leaves is past in the course of a few hours. The fungus, in his opinion, does not live on decayed matter, but is one which produces decay and renders the plant unhealthy.* Various other causes have been assigned for this extraordinary disease, but all have appeared unsatisfactory, and the subject is still involved in mystery. Professor Balfour, after reviewing the various explanations given, both chemical and physiological, says, "the general conclusions to be drawn from all that has been said relative to the potatoe disease are that changes are induced in the cells and vessels of the potatoe by certain obscure meteorological and epidemic causes; that an attraction takes place in the cellulose and in the contents of the cells, which speedily leads to decay; that parasitic *Fungi* find a nidus in the decaying organic matter, so as to accelerate and give a character to the disease; and that as yet no remedy has been devised."

The vine disease also results from a parasitic fungus, the *Oidium Tuckeri*. The ravages of this plant, as in the former case, have entailed great distress on the inhabitants of the wine-growing countries; the crops in some districts having been entirely destroyed. As yet no certain method has been discovered to stop its increase. This, like the *Botrytis infestans*,

* In the Journal of the Horticultural Society, vol. i, page 25, Mr. Berkeley enters very elaborately into this subject.

or potatoe fungus, attacks the leaves of the vine, and spreads to the fruit. It is supposed by many that it makes its first appearance in the roots, but as yet I believe there is no proof that this is the case.

The currant is the fruit of a small grape, the *Uva Corintha.* This has also suffered much; and being so commonly used as an article of food, has made almost all classes in this country familiar with the disease, indeed it is now so common that it is with difficulty that a sample of currants can be obtained without being more or less affected with the disease. The *Oidium Tuckeri* and the *Botrytis infestans* belong to the same order of fungi as that found in the pear. The disease called dry rot is also caused by the mycelium of a fungus decomposing the tissues of the wood.

It is not in the vegetable kingdom alone that these parasites are found; the animal kingdom is also attacked by them in various forms, and man suffers to a considerable extent by them. Parasitic fungi may be found in the ringworm, thrush, and many cutaneous complaints; also in that fearful and dreaded disease cancer. The muscadine so destructive to the silkworm is caused by the growth of *Botrytis Bassiana.* It is a well ascertained fact that many of the diseases commonly called blight, are caused by the growth of parasitic fungi, and the more the microscope is used the more easily will they be traced to their proper origin.

In cases like the present, however, the most important question for consideration is, how can these diseases be eradicated? and this is a subject of no inconsiderable difficulty; for when dealing with living plants or animals, we cannot apply stringent remedies without great danger of sacrificing the life of the parent plant or animal. In Kyan's process for the prevention of dry rot, the timber is impregnated with a solution of corrosive sublimate, a most powerful poison; but what living plant or animal could be so treated? hence the great difficulty experienced in stopping the ravages of disease in such cases, for most chemicals that will kill the parasite will also kill the plant on which it grows. As this disease has so lately made its appearance, it is impossible at present to suggest a remedy. Several washes however have been tried, and it is said with some success, to stop the progress of the vine disease; and as our present disease is so similar in its nature, I would suggest a similar treatment. Mr. Quarles Harris, in his paper on the vine disease, gives the following remedies as those which have been found most efficacious; and as they

have been found not to affect the health of the plant, I would suggest them as likely to be useful in this case.

1. Mix one-half of black powdered sulphur with one-half of potash; make into a wash of the consistency of usual whitewash, and with a brush paint the stems and shoots, and rub it well into all crevices.

2. Mix one-half of common sulphur with one-half of quick lime, make into a wash as above, and apply in the same manner.

3. One pound of slack lime and one pound of black sulphur, boiled for twenty minutes in five pints of water, allowed to cool and fall bright; to be then drawn off into bottles. One pint to be mixed with 100 pints of water, and the trees well syringed with the mixture.

Mr. Higgin intends to apply the last remedy, and I have little doubt that before the next fruit season he will be able to throw additional light on the subject.

POSTSCRIPT.—Since the above paper was written, I have examined the fruit of a pear tree from the neighbourhood of Maghull, which has been completely destroyed by the same disease. The fruit, when examined under the microscope, presented a similar appearance to that described in the foregoing paper.

EXPLANATION OF PLATE.

FIGURE 1. Section of diseased pear.
A. Decayed part affected by fungi.

FIGURE 2. A. The mycelium in its natural state magnified 400 diameters.
B. The granular contents of the articulations.
C. The cellular tissue of the pear.

FIGURE 3. Fructification.

ON THE RISE OF THE MANUFACTURING TOWNS OF LANCASHIRE AND CHESHIRE.

By David Buxton, Esq.

(READ 8TH MAY, 1856.)

The towns of the Manchester District have already formed the subject of one of the papers brought before this Society, during the present session.* But the elaborate statement of Mr. Danson dealt almost exclusively with the statistical aspect of the subject, as exhibited in the results of the census of 1851. If I now travel over the same ground, it is in the hope of being able to group together various interesting details of a more general character; and so to afford those amongst us who are not intimately acquainted with the locality, a more complete view of the rise and extension of the manufacturing towns in the south-east of Lancashire and adjacent parts of Cheshire. These towns are sixteen in number, twelve of them being in Lancashire, and four in Cheshire. The former are Bolton, Bury, Oldham, Middleton, Rochdale, Heywood, Radcliffe, Ashton, Leigh, Atherton, Salford, and Manchester. The latter (the Cheshire towns) are Stockport, Hyde, Stalybridge, and Dukinfield. Now the relation which all the rest bear to Manchester is very peculiar, but the notice of it is by no means new. Dr. Percival, writing upon the population of Manchester in 1773, says,—"A considerable part of the manufactury of this flourishing town is carried on in the adjacent country, which is thereby crouded with houses and inhabitants."† And that which thus commenced with the first impetus to the cotton manufacture, has gone on ever since; and we shall find that all the surrounding towns are dependent upon the great central mart, as

* See "On the Area and Population of the Manchester District," by J. T. Danson, Esq., F.S.S. and V.P. of the Historic Society. Antè p. 165.

† Observations on the State of Population in Manchester, &c., p. 9, in Philosophical, Medical, and Experimental Essays, by Thomas Percival, M.D., F.R.S., F.S.A. London, 1776.

colonies are dependent upon the mother country; as children upon a parent; as the expanding and lengthening branches—or, more truly still, as transplanted offshoots—are related to the parent stem.

The proof of this involves so many points of interest, that I beg for a short time to call attention to them. But, first of all, it is very noticeable that, before the passing of the Reform Bill, not one of all the populous and wealthy towns which I have named possessed the privilege of parliamentary representation. To us, who know the influence which this district has exercised upon recent legislation, it appears scarcely credible that Manchester, and its tributary towns, should only have possessed the elective franchise during the last twenty-four years. Such, however, is the fact. Twelve borough members are now returned by such of the towns as were then enfranchised, viz., two each by Manchester, Stockport, Oldham, and Bolton: and one each by Salford (which in effect is part of Manchester), Ashton, Bury, and Rochdale. Since their enfranchisement as parliamentary boroughs, most of them have also become corporate towns; and besides the privileges which Manchester thus acquired in common with the other towns of the district, it has also been erected into an episcopal see, and has more recently, by a special exercise of royal authority, been dignified with the title of "city."

To shew that the extension of manufactures in the surrounding towns, is simply the extension of Manchester itself, it is only necessary to mention, that the cotton manufacture divides itself into several branches; and that for the proper carrying on of some of these—bleaching, and calico printing, for instance—certain local conditions are requisite, which a populous town cannot furnish. Accordingly, we find that bleaching has betaken itself to Radcliffe, Horwich, and the neighbourhood of Bolton; and the printing of calicos has found more congenial homes on this side of the Yorkshire, Cheshire, and Derbyshire boundaries,—on the banks of the various tributaries of the Mersey and the Irwell.* Even weaving sheds, built in a single story, are nestling down in country places, where land is cheaper, as any traveller between Liverpool and Manchester may see as he

* The only Print Works which occur to me as being within the town of Manchester are those carried on by Mr. Alderman Neild and others, under the well known firm of Thomas Hoyle and Sons. The establishment has been largely extended, and has been in existence as the Mayfield Print Works for a great number of years.

passes along. The heavier processes of carding and weaving can only be carried on upon the ground floor, or in the lowest stories of a building; but spinning and the lighter operations may be as well or better conducted in the upper stories. Even cotton spinning itself, however, must reach its limits in a town like Manchester, where the area is covered, and property is becoming daily of greater value. And it has done so. Old factories are sometimes enlarged, but new ones are not built *there*. They are built out in some convenient spot in the *district:* and this extension of the smaller towns is as much a sign of the expansion of Manchester proper, as the construction of docks on the north shore, or the building of residences at Aigburth or Roby, is a proof of the expansion of Liverpool. It may seem strange to say so, but the fact is, that Manchester is becoming (in proportion to the whole aggregate of production) less and less the chief *manufacturing town*, and more and more the central *mart* for the whole manufacturing district. Of the hundreds of manufacturers who throng the Manchester Exchange every Tuesday at mid-day—representatives of the wealth, and energy, and skill, which are embarked in the staple trade of the place—I doubt if more than one in ten lives, not in the town *itself*, but *anywhere* within the parliamentary boundaries of Manchester and Salford.

Take another illustration of the same fact. There are many names known far beyond the immediate locality where they were first known, and which have become bound up not only with local but with national history. All the world will tell you that the original Sir Robert Peel was a Manchester manufacturer, and that Mr. Cobden's first essay in public was as the author of a pamphlet, in which he assumed the same general designation.* Yet what are the facts? The warehouse of the Peels was in Manchester, but their works were at Bury; that of the Cobdens was also in Manchester, but their works were at Clithero. Mr. John Feilden, (who, as M.P. for Oldham, carried the *Ten Hours Act*,) had his place of business in Manchester too, but his works were at Todmorden. And there are at this moment many others whose names are extensively known in connection with the place, and with the cotton manufacture, who though they are popularly considered as belonging to Manchester, (and though some of them actually

* "England, Ireland, and America, by a Manchester Manufacturer." This publication appeared about twenty years ago.

do reside there, and all of them have their places of business in the town,) still have their works situated in various parts of the surrounding country. Thus the works of the present member for Manchester, Mr. John Bright, are at Rochdale; those of his predecessor in the representation, Mr. R. H. Greg, are at Caton, near Lancaster, and at Bollington, in Cheshire. Among the ex-mayors of the town are Sir Elkanah Armitage, and Mr. Kershaw, M.P. The works of the latter are at Stockport; and those of the former at Pendleton,—a suburb of Manchester, which is in the borough of Salford, but in the parish of Eccles. The manufactory of Mr. J. Cheetham—M.P. for this division of the county—is at Stalybridge, and that of Mr. Charles Hindley, M.P., at Dukinfield; though both are popularly considered and called "Manchester men." And not needlessly to extend the list, I will only add, that the Messrs. Grant, of Manchester, (the "Cheeryble Brothers," of *Nicholas Nickleby*,) had their works, not in the town where their warehouse is situated, but at Ramsbottom, near Bury.

Again, a borough town, or any place possessing a considerable population, or independent means of wealth, will generally be found to possess its own newspaper, and its own local bankers. Now I will venture to say, that nowhere throughout the United Kingdom (though the district round Leeds may afford a somewhat similar case) will you find such large masses of people congregated together, and so much visible wealth accumulated, with such a remarkable absence of these accompaniments, as in the tributary towns now under consideration. And why? Because the Manchester papers are the press of the district, and the bankers of the district are the banking firms or companies who conduct their business in Manchester. As regards the press, though the Manchester papers circulate through the district, and form the only issue of any account, I am not unaware that there have existed, or do exist, a few local prints in those places which return members to parliament; and where, consequently, political differences, and occasional party contests, tend to support the organs of public discussion. But the insignificance of these existing exceptions, and the ephemeral life of some which exist no more, are only corroborations of the general statement which I have just made. To test the assertion fairly, one must not look at the state of things since the repeal of the newspaper stamp, but go back to a period which shews more unexceptionably the ordinary conditions of these localities. From a publication issued in 1852,

purporting to give a list of all the newspapers published in Great Britain in the year 1850, with the number of stamps issued to each, I cannot find that there was at that time any newspaper published in Ashton, Hyde, Stalybridge, Oldham, Middleton, Rochdale, Bury, Heywood, Radcliffe, Atherton, Leigh, or Dukinfield: while in Bolton there was one paper, to which, in 1850, 72,000 stamps were issued; and in Stockport, two papers, to one of which 14,980 stamps had been appropriated, and 28,500 to the other. To the four papers published in Manchester, the issue had been, during the same period, nearly two millions, viz.—1,916,910. And if it were worth while to examine how far the question under review is illustrated by the banking system of the district, we should find that with the exception of about three private firms, four or five local Joint Stock Banks, and several branches and sub-branches of the Manchester and Liverpool District Banking Company—five towns being without any provision at all, and three more possessing only one of these branches—the whole banking business is transacted in Manchester; the firms and companies situated there being, in fact, not the bankers of the town alone, but of all the surrounding district.

I will now endeavour to point out some of the causes which either have determined the original establishment of manufacturing enterprise in these places, or have led to their rapid increase in wealth, population, and national importance. Manchester is not a new town. I need not go into its history, or investigate its date. In the reign of Henry VIII. it is spoken of as "well inhabited, and distinguished for its trade in linens and woollens;" and in an act of parliament, passed in the following reign, mention is made of "Manchester, Lancashire, and Cheshire Cottons; and of Manchester rugs and friezes." It was not until the middle of the last century that the cotton manufacture began to assume that importance which has led to the enormous increase in all the attributes of prosperity which characterise this district; and Liverpool also, as the port of the district. The importation of raw cotton into this country, which in 1701 was under two millions of pounds, and in half a century later had not increased to three millions, sprang up between 1751 and 1780 to nearly six and three quarter millions; in 1790 it reached thirty-one and a half millions; and in another ten years increased more than 75 per cent., shewing an augmentation of imports, within the century, from 1,985,868 pounds to fifty-six millions of pounds.

Simultaneous with this, was the increase in the value of the cotton goods exported; as will be seen by the following table:—

Year.	Cotton Wool Imported. lbs.	Cotton Goods Exported. Official Value
1751	2,976,610	£45,986
1764	3,870,392	£200,354
1780	6,700,000	£355,060

In seven years more, when the strenuous efforts which had been made to overthrow Arkwright's patents had been successful, the amount of exports rose immediately to the value of £1,101,457. These figures shrink, of course into insignificance by the side of the present returns; * but they indicate when it was that the first bound, in the rapid increase which is still progressing, actually took place. A glance at the table just given will show that it was about 1763 or 1764. In the former year, the seven years' war, which secured to England the possession of Canada, was brought to an end.† In the same year, the traffic between Liverpool and Manchester was carried on by a fleet of eight river flats. But this imposing line of transports did not long suffice. In the same year, the Spinning Jenny was invented. The two requisites to the developement of our local resources, which has since taken place, were first, suitable machinery, and second, readiness of communication. Both were supplied, almost simultaneously. From this point may be dated the marvellous growth of the cotton manufacture, and of local prosperity. The slow and laborious processes, which are recorded in the very name MANU-*facture*,

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*The returns of some subsequent years, and those which have been most recently published, will enable any one who is interested in the subject, to institute the comparison here suggested:—

Cotton Wool Imported.

1800.	1823.	1845
56,000,000 lbs.	187,231,520 lbs.	721,980,000 lbs.

For the first *three months* of 1855, the quantity imported was 174,695,584 lbs., and for the first *quarter* of the present year, 206,494,736 lbs. The value of the Cotton goods exported, has increased as follows: —

1834.	1835.
£13,783,375	£15,306,922

During the first *quarter* of 1855, the declared value of the manufactured Cotton goods exported, (exclusive of twist), was £6,176,520, and for the corresponding period of the present year it was £6,723,390—that for the month of March alone being £2,476,378—or nearly at the rate of thirty millions per annum.

†"The rapid increase of Manchester commenced about the year 1765, after the conclusion of the last war."—Dr. Percival: *Essays, ut supra, p.* 29.

were now superseded, and every suitable climate in the world was henceforward laid under contribution, to furnish the raw material upon which this great enterprise subsists as its natural food.* In 1760 the carding machine, invented by Lewis Paul, to be used in the woollen manufacture, was introduced into Lancashire, and applied to cotton. In 1764, calico printing was first brought into this county, though not applied with much effect, until taken up by the Peels at a later period. In 1769, Arkwright's first patent for the "water frame" spinning machine was issued; and also Watt's first patent for his discovered improvements in the steam engine. In the following year (1770), the spinning Jenny, invented by Hargreaves, was patented, though the principle had been discovered, as just stated, four or five years before. Five years later, (in 1775,) Arkwright's second patent was taken out, for his carding, drawing, and roving machines. From 1776 to 1779, Crompton was working his way to the invention of the mule spinning frame, though it scarcely came into use, until after the success of the attempts which were repeatedly made to overthrow the patents of Arkwright. This was in 1785—a year of great importance. In this year it was that Cartwright obtained the first patent for his power-loom; Boulton and Watt applied their first engine as the motive power in the cotton manufacture; and the printing of calico from cylinders was introduced. But to make these discoveries and improvements practically valuable, readiness of communication was also essential: and this was supplied simultaneously, by an extensive system of canal navigation, by means of which the raw material was brought in to be worked, and the manufactured article could be either returned to Liverpool for shipment, or forwarded to the various home markets for domestic consumption. The act for

*The following table exhibits the various sources of supply, and their relative importance:—

Raw Cotton imported during the three months ending March 31st, 1856, and in the corresponding period of 1855.

	1856.	1855.
United States	1,590,661 cwts.	1,431,234 cwts.
Brazil	38,856 „	28,414 „
Egypt	37,527 „	23,908 „
British India	171,110 „	75,222 „
Other Parts	5,549 „	1,004 „
Total cwts.	1,843,703	1,559,782

making the Sankey and St. Helen's Canal (the first in England), had been obtained in 1755. The greater work, which we owe jointly to the energy and perseverance of the Duke of Bridgewater, and the genius of John Brindley, was authorised by Parliament in the session of 1758-9, and opened in 1762. Between 1791 and 1794, acts were obtained for the construction of separate canals from Manchester to Bury and Bolton, to Ashton and Oldham, and to Rochdale: and by means of various branches and extensions, a complete system of water communication was speedily established, not only with the towns of the immediately surrounding district, but extending into the neighbouring counties and to remoter places.* Without the facilities of transit which were thus supplied, the prosperity of manufacturers, which increased at such a rapid rate at the time now spoken of, would have been an utter impossibility. The only towns in the district which are accessible by river communication, are Stockport and Manchester, and the Irwell has been made navigable up to Manchester only by artificial means.

The circumstances which determine the locality of manufactures, will be found to resolve themselves generally into—I, Convenience of site: and II, Facility of transit. Convenience of site implies in the present instance that there shall be (1) a copious supply of water: (2) a cheap supply of coals, arising either from the proximity of the mines, or from cheapness of conveyance: (3) a suitable and sufficient population: and (4) no pre-occupying or more important business, or one more convenient to be carried on in that locality.† The principle which governs these matters is not that of local exigency, (or we should have manufactories in every populous town) but of local convenience. And we may see on every side how natural is the tendency, in all the more extensive forms of

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*It is estimated that the canals now open in England, are 2800 miles in length; and that we have also 2500 miles of navigable rivers, which have been partly made so by artificial means.

†When we consider how the maritime trade of Liverpool has swallowed up every other, and driven out, as if they had no right to a footing within its borders, the manufacture of pottery, and the craft of watchmaking; and that, in rebuilding the only cotton factory ever erected here, it has been turned into a flour mill,—it is evident that this last consideration is a very important one. The attempts which have also been made in other places, e.g., at Hull, Bristol, and elsewhere, to introduce the cotton and other manufactures, (and which, if they have not failed entirely, have certainly not sufficiently encouraged the experiment to warrant its extension,) are additional evidence to the same effect.

manufacturing enterprise, to fix themselves, and to spread out, in some convenient locality. Thus the cotton manufacture is chiefly carried on in and around Manchester; the broad cloth trade is in that district of the country which is popularly known, in this very connection, as "The West of England;" the coarser and heavier woollen fabrics are made in the West Riding of Yorkshire; the principal iron works are in those parts of the counties of Stafford and Worcester, which are known as the "black country;" the making of earthenware has acquired for a neighbouring district the name of "the Potteries;" and the smelting of copper and other ores is peculiar to Glamorganshire. The presence of minerals does of necessity fix a certain amount of industry to the spot where they must be worked; but the genius of manufactures is more erratic. She may and does wander about to find the likeliest spot to settle in, but when it is found, it becomes the ample home of a prosperous and ever-increasing progeny.

The facilities of transit which were furnished by canal conveyance, soon became inadequate to the trade which its establishment had helped so largely to develope.

A declaration of 150 merchants of Liverpool, issued in 1824, set forth that they had "for a long time past experienced great difficulty in obtaining vessels to convey goods from this place (Liverpool) to Manchester, and that the delay was prejudicial to the trading and manufacturing interests at large:" that the existing means of transport (i.e., the Irwell and Mersey navigation, and the Bridgewater canal) were "quite inadequate," and "that a new line of conveyance had become absolutely necessary to conduct the increasing trade of the country with speed, certainty, and economy." In 1830, Liverpool and Manchester were linked together by the present line of railway, and in process of time most of the larger towns in the manufacturing districts were placed in direct commmunication with Manchester, as the various projects to which the success of the original experiment gave rise, were carried into effect.

Yet, it must not be supposed that the water route is entirely superseded. There are peculiar advantages to the manufacturer in the proximity of the canal. His chief and indispensable requisites are cotton and coals. Both are very bulky; both very inexpensive in proportion to their bulk; and neither, therefore, will bear a heavy rate of freight. Besides the

other advantages of a waterside position, there is this: that both these articles may thus be easily delivered, and cheaply conveyed; the canal boats can be brought alongside, and even run into the factory yard; and their contents can be laid down upon the very spot where they are required for use. Where these conveniences are wanting, there must be the additional item of cartage introduced into the cost; and this, where constant consumption necessitates constant supply, must amount in the aggregate to a sum sufficiently considerable to make exemption from it worth trying for. The consequence is, that nearly all but some of the oldest mills,—as Houldsworth's, and that of the Oxford Road Twist Company, in Manchester—stand upon the banks of the numerous canals which intersect the district.

The original position of the various branches of the cotton manufacture in the places where it is now carried on, and which have grown into large towns from insignificant villages,—multiplying wealth "beyond the dreams of avarice,"—was undoubtedly determined by their possession of the means of water power; though this advantage soon became of little value, on the application of steam as the principal motive power. The situation of Stockport is where the Tame and the Goyt uniting form the Mersey. Upon the first of these streams stand Ashton, Dukinfield, Hyde, and Stalybridge. Manchester stands at the confluence of three rivers,—the Irwell, the Medlock, and the Irk. The two last-named are nowhere navigable, in any part of their course; and the first, though rendered navigable up to Manchester, ceases to be so at that point. Nearer to its source, it flows past Bolton and Bury: and the Medlock, higher up, passes Oldham; while Rochdale and Heywood stand upon the bank of another small stream, from which the former town takes its name—the Roach. These facts, it is manifest, bear strongly upon the point of original situation; and, as regards development, it is noticeable, that all these towns possessed canal communication more or less complete, and that the relative importance to which they had severally attained, is strikingly attested by the position which each assumed in the railway system. The presence or absence of a railway is in itself a fact of great significance, in the consideration of a question like this. The projectors or managers of a railway can only regard a group of towns under one aspect.

Their wisdom is to calculate
What [traffic] they will yield.

Thus the large towns are chosen as stations or termini, and they become larger; the smaller towns are passed or avoided, and they become smaller. The first shoot faster onward: the latter lag more in the rear. After Manchester became connected with Liverpool, lines of railway were continued or opened to Wigan, Preston, and Bolton; then to Rochdale, Heywood, and Todmorden, and so on to Leeds: and now the great centre of the district is accessible by railway, from nearly every one of its manufacturing dependencies. To some of them, indeed, this advantage has accrued somewhat tardily, and also indirectly. Those places received it latest which could wait the longest; as they were only included in the plans of rival companies, when the more remunerative towns were already supplied, and the zeal for railway extension set in rather too strongly for the interests of shareholders, however beneficial it may have been in other respects.

And now, on looking back, and comparing the present with the past, we see how, in less than a century of time, there has been wrought a very miracle of progress. The contrast is one which must astound even those who are most familiar with the facts. The population of Manchester and Salford, which in 1757, was 19,839, had increased in 1851 to 401,321. Liverpool, which in 1750 had 22,099 inhabitants, at the last census contained 375,955 souls, within the borough alone, exclusive of the environs. Between the years 1773 and 1851, the population of Bury increased from 2,090 to 31,262; and that of Bolton from 4,568 to 61,171. The importation of raw cotton, which in 1751 was under 5,000,000 lbs., had risen in 1800 to 56,000,000 lbs., and for the first three months of the present year, it was at the rate of 206,500,000. The export of cotton manufactured goods, of which in 1751, the declared value amounted to no more than £45,986, reached in the month of March last the sum of £2,476,378, or nearly £30,000,000 sterling per annum. The cotton manufactories of all kinds, in England (exclusive of Scotland and Ireland), were, in 1850, 1,753 in number: of which 1,235, or 70 per cent. were in the county of Lancaster alone, and 145, or 8¼ per cent. in Cheshire. The proportion of water to steam power employed in the cotton manufacture throughout the country was 13

per cent: but in Lancashire it was little more than 7 (actually 7.2) per cent. Instead of the hand processes, or the imperfect contrivances which retarded rather than promoted the growth of this enterprise a century ago, there was found in the factories of Lancashire a mechanical force equal to 50,286 horse-power, (in the proportion of 3,376 of water, to 46,910 of steam), and this was employed in turning 13,955,497 spindles, and propelling 176,947 power-looms.* At the same time the success which has been attained in the construction of the machinery and mechanical appliances of the cotton manufacture, has given not a local celebrity merely, but a world-wide reputation to the names of Fairbairn, Sharp, and Whitworth of Manchester, Platt of Oldham, and Nasmyth of Patricroft. And, lastly, it is worthy of notice, as a very significant proof of its wonderful prosperity, that a tract of country almost entirely destitute naturally of the water-way which is the wealth of other countries, has been supplied by skill and enterprise, with lines of canal communication and a vast net-work of railways, which bring every needful article to its own doors, and carry its products forth to every home in the country, and for distribution to every nation in the world. So that, independently of all differences of opinion, or possible diversity of interest, there can be no question whatever upon this point—that in growth of population, in rapidity of extension, in developement of resources, in the wealth which these conditions represent, in the ever-active spirit of enterprise which influences and urges and directs the whole, and in the social and national importance which fitly waits upon such extraordinary success, no district in Her Majesty's dominions can be placed in comparison with that southern division of the county of Lancaster, in which we live: and which depends as much, for its marvellous prosperity upon Liverpool and Manchester equally, as the colossal steamer, which brings New York as near to us as London used to be, depends upon the simultaneous action of *both* its paddles for its propulsion and progress.

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* See Table on the next page; extracted from the collection of Parliamentary papers in the Liverpool Free Public Library. For other assistance in the compilation of this paper, I am indebted to a work on the History of Manchester, published in 1836, by James Wheeler, Esq., of the Northern Circuit.

ABSTRACT OF A RETURN OF THE NUMBER OF COTTON AND OTHER FACTORIES, SUBJECT TO THE FACTORIES' ACT, ORDERED BY THE HOUSE OF COMMONS TO BE PRINTED, 15TH AUGUST, 1850.

COTTON FACTORIES.

FACTORIES EMPLOYED IN SPINNING.

	No. of Factories.	No. of Spindles.	No. of Power-looms.	Amount of Moving Power.		Total Numbers Employed.		
				Steam.	Water.	Male.	Female.	Male & Female.
Cheshire	76	816,680	..	1,853	229	4,025	2,911	6,936
Lancashire	517	6,110,074	..	16,102	1,340	26,165	29,847	56,012
Total for England (i.e., in counties of Chester Cumberland, Derby, Lancaster, Middlesex, Nottingham, Stafford, and York)	762	8,685,392	..	21,094	3,925	38,284	42,260	80,544

FACTORIES EMPLOYED IN WEAVING.

Cheshire	6	..	842	83	20	222	200	422
Lancashire	196	..	31,875	2,538	152	8,045	11,629	19,674
Total—(i.e. in Chester, Cumberland, Derby, Lancaster, and York)	229	..	36,544	2,840	370	9,173	13,216	22,389

FACTORIES EMPLOYED IN SPINNING AND WEAVING.

Cheshire	58	1,472,439	28,224	6,792	843	12,550	15,707	28,257
Lancashire	436	7,766,991	143,690	27,612	1,820	61,125	74,135	135,260
Total—(i.e. in Chester, Cumberland, Derby, Gloucester, Lancaster, Stafford, and York.)	540	10,055,410	184,816	37,368	3,170	79,967	96,809	177,976

FACTORIES NOT INCLUDED IN EITHER OF THE ABOVE DESCRIPTIONS.

Cheshire	5	5,584	132	16	23*	80	77	157
Lancashire	86	78,432	1,382	658	64	1,691	3,346	5,037
Total—(i.e. for Cumberland, Chester, Derby, Lancaster, Leicester, Middlesex, Norfolk, Nottingham, Stafford, Surrey, Warwick, and York.)	222	433,167	2,266	1,638	717	4,186	7,767	11,953
Total of Cotton Factories it England.	1,753	19,173,969	223,626	62,940	8,182	131,610	160,052	292,862
Total in Lancashire.	1.235	13,955,497	176,947	46,910	3,376	97,026	118,957	215,983

Mem. by Mr. Horner: The return of cotton and silk factories in my district is incomplete; for Messrs. John Bright, & Brothers, who have two factories in Rochdale, and one at Collyhurst, near Manchester, and Messrs. T. J. & T. Walker, of Leigh, near Manchester, have refused to make the return called for.

* The disparity between the proportion of steam and water-power in the manufacturing and non-manufacturing counties, may be shown by comparing Chester, Derby, and Stafford, with York and Lancaster:

	Steam-power.	Water-power.
Lancaster	658	64
York	258	46
Derby	136	323
Stafford..	91	133
Chester	16	23

This refers only to the factories included under the fourth denomination.

RESULTS DEDUCED FROM OBSERVATIONS, TAKEN WITH THE SELF-REGISTERING ANEMOMETER AND RAIN-GAUGE, AT THE LIVERPOOL OBSERVATORY, DURING THE FOUR YEARS ENDING DECEMBER 31, 1855.

By John Hartnup, Esq., F.R.A.S., V.P.

(Read 17th April, 1856.)

The instrument above-named was erected by Mr. Follett Osler, in the autumn of 1851. At the Liverpool Meeting of the British Association, in 1854, Mr. Osler gave a brief history of the invention of the instrument, and I supplied him with various tables of results, and such information as was necessary to illustrate its performance. This communication, including the tables and diagrams which had been prepared, was ordered to be printed entire in the proceedings of the Association, and it will appear in the volume for 1855, together with the results of observations for that year. The printing of the tables, and the engraving of the plates, will involve a considerable expense, and as they were thought to possess considerable local interest, Professor Phillips, the Secretary of the Association, kindly gave permission for as many copies to be struck off as might be required for the next volume of the Historic Society.

In the instrument to which we have alluded, the arrangements are such, that the pressure of the wind in pounds on the square foot, the horizontal motion of the air in miles for any required interval, and the direction of the wind, are continuously recorded on sheets of paper. The time at which it commences to rain, the rate at which it falls, and when it ceases to fall, will also be found recorded on the same sheets of paper. At an elevation of about thirty feet above the roof of the observatory, a pressure plate of four superficial feet is kept facing the wind by means of a set of small vanes. This plate is urged in opposition to the wind by eight springs, so arranged that a slight spring comes into play with a light wind, and stronger springs are made to act in conjunction with the first successively

as the plate is driven back by the force of the wind. A chain from the pressure plate passes over a pulley and communicates with a wire which passes through a vertical spindle, and is held tight at the bottom by a slight spring; by this wire a pencil is moved transversely to the direction in which the paper, intended to receive the record, is carried by a clock. Lines are printed on the paper which correspond to the different values of the pressure; the intervals of these lines were adjusted by applying weights of 4lbs., 8lbs., &c., to move the pressure plate in the same manner as if moved by the force of the wind. The vanes which keep the pressure plate facing the wind are made to turn the vertical spindle, and by means of a spiral groove near the bottom of the spindle a rod is raised or depressed. This rod carries a pencil which is moved, when the direction of the wind changes, transversely to the direction in which the paper is carried by the clock. Lines are printed on the paper which correspond to the positions which the direction pencil must take when the pressure plate faces the different points of the compass; the paper has also transverse lines which correspond to the positions of the pencils at every hour. The direction pencil was adjusted by placing it on the south line when a vane placed over the transit instrument was seen, during a brisk wind, to point to the meridian mark. The meridian mark of the transit instrument is three miles distant from the observatory.

The receiving surface of the rain-gauge is 30 feet above the ground, and it exposes to the rain a surface of 400 square inches. The collected water passes through a tube into a glass vessel; the glass vessel is made to descend by the weight of the water, and in its descent a pencil is carried with it. When a quarter of an inch of rain is collected, the glass receiver discharges itself by means of a modification of the syphon, and the pencil ascends to the zero line. The scale of the printed paper was adjusted by filling the water vessel until it emptied itself, and then by weighing the water its bulk was ascertained.

The velocity of the air is obtained by means of a horizontal windmill, having for its vanes four hemispherical cups; the action of the wind on the concave surfaces exceeds that on the convex; and Dr. Robinson has found (Transactions of the Royal Irish Academy, vol. xii., part 3,) in a windmill thus constructed, the centres of the cups move with one-third the velocity of the air. The hemispheres are eight inches diameter, and the

distance of their centres from the axis of rotation is three feet. A vertical spindle connected with the horizontal windmill works in a cup which is kept nearly filled with Young's patent mineral oil; this spindle is made to turn a cylinder, the circumference of which is 27.8 inches. The paper which receives the record is stretched tight over the cylinder, and for every inch of paper worked off, the centres of the hemispheres travel 12.75 miles, or 38.25 miles of air passes over the station. The results have been tabulated on this assumption.

The paper on which the tracings are made by the pencils of the self-registering instrument are preserved for future reference, but the results are regularly tabulated.

Tables I and II are copies of the records for one month, shewing how they are tabulated daily from the registers given by the instrument.

Table I part 1, gives the horizontal motion and direction of the wind for every hour of the day; the latter is indicated by a figure, the sixteen points of the compass being numbered in rotation, commencing with N.N.E. No. 1, N.E. No. 2, &c.

Part 3, table II, is an abstract of the above, and shews the daily amount of horizontal motion from each point of the compass, and the number of hours each wind continued.

Part 4, table II, is obtained from the rain-register, and shews the quantity of rain in thousandths of an inch that fell in each hour during the month.

Part 2, table I, contains the daily totals obtained from the hourly records of the wind and rain as above described, together with the extreme pressure of the wind in pounds on the square foot for each day, and the time at which it occurred.

From the monthly sheets, of which tables I and II are specimens, the annual tables III and IV are obtained. In table III the results are arranged according to the points of the compass, and in table IV according to the hours of the day. It is unnecessary to enter on a detailed description of these, as it is hoped that the heading of each table and column affords sufficient explanation.

The tracings contained in plate M have been reduced from the large scale on which they were first drawn for exhibition, at the meeting of the British

Association, in Liverpool. They were laid down directly from the worked paper of the integrating instrument, according to the method suggested by Dr. Whewell. They shew the path of the wind, or the direction in which a particle of air passing directly over the observatory would be carried during each of the four years. These tracings for the different years, it will be seen, bear but little resemblance to each other, with the exception of the general tendency of the air to move from West towards East; and the motion of the air in this direction during the year 1854, was much greater than it was during either of the other years.

The diagrams in plates **N**, **O**, **P**, and **Q**, have been prepared by Mr. Osler, from the results given in tables III to VIII inclusive, with the view of conveying a more comprehensive perception of the results than can readily be obtained by consulting tables in which there are so many figures. The method also greatly facilitates the comparison of different years with each other. In the first row of diagrams in plate **N**, the various winds are classified, so as to shew the relative amount for different years, and a remarkable coincidence is observable.

In the second row of diagrams, the hours during which each wind has lasted are compared, and in these the resemblance that the different years bear to each other is even more striking. .

The average hourly rate at which each wind travels, is shown in the third row of diagrams, plate **N**; from this it will be seen that all those winds having a westerly bearing travel very much the fastest. Those from the S. to the E. proceed at a much slower rate, while such as come from the North-east average but a little more than one-third the rate of the Westerly winds (for the exact rates see table III, column 6.)

With reference to the results obtained from the Rain-registers, the first row of diagrams, plate **O**, gives a comparative view of the amount of rain which accompanied each wind, while the second row exhibits the number of hours it occupied in falling; from these the hourly rate is at once obtained, and the result is shewn in the third row of diagrams on the same plate. In addition to this, the quantity of rain compared with the amount of air that passed over the station has been taken out (see table III, column 13), and a diagram (see plate **P**, fig. 2) is given, showing the mean quantity of rain that falls to every thousand miles of air from each point of the compass. By this it will be observed that for every 1000 miles of air the North-

easterly winds, which are the lightest, bring with them a much larger proportion of rain than those from any other point.

Table V gives the hourly amount of rain, and is illustrated in fig. 1, plate P. As far as four years are capable of indicating, it would appear that the minimum amount of rain falls during the first three hours after midnight, and that there are three periods in the day when an increased amount of rain falls, namely, between seven and eight o'clock in the morning, between one and two in the middle of the day, and between eight and nine in the evening; but before any satisfactory conclusions can be arrived at on this subject, it will be necessary to obtain averages for a longer period.

Table VI gives the average hourly motion of the air in miles for each month, direction not being regarded. The tracings shewn in fig. 3, plate P, exhibit the comparative results given in this table, by which it appears that the greatest amount of motion in the air takes place in the months of December, January and February. November seems to be the stillest month in the year, and March, which is usually considered such a windy month, is in fact one of the four in which the least amount of motion in the air occurs, while April is only surpassed by the three winter months mentioned above.

Table VIII, like the preceding, gives the mean hourly motion of the air without regard to direction, but instead of referring to the months, shews the amount of motion between any one hour of the day and the next hour following, for each of the four seasons. This is illustrated in plate Q, in which a remarkable coincidence will be seen to exist between the curves and the temperature at the different hours of the day.

The value of the observations will necessarily increase with their progressive accumulation. There are, doubtless, many interesting results which still remain to be worked out from the records which we already possess, and I trust that the method which we have devised of tabulating the observations (see specimen tables I and II*) will be found to render it a comparatively easy task to work out such results as may at any future time be thought desirable.

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* The illustrative Tables and Plates are inserted between this and the next numbered page.

Part 3.

f an inc

1855. July.	N.N.E. 1		N.E. 2		E.N.E. 3			12	1
	Miles.	Hours.	Miles.	Hours.	Miles.	Hours.	Miles.		
1	....	..	....	..	9	2	4	....	..
2	....	..	....	..	....	..	7	....	..
3	....	..	....	..	....	..	....	....	..
4	....	..	....	..	....	..	....	....	..
5	....	..	6	1	8	1	11	....	..
6	....	..	....	..	....	..	11	....	..
7	....	..	....	..	....	..	....	....	..
8	....	..	....	..	....	..	....	....	..
9	....	..	....	..	....	..	57	....	..
10	4	1	....	..	48	5	70	....	..
11	2	1	....	..	3	1	....	....	..
12	4	1	....	..	....	..	....	....	..
13	....	..	....	..	....	..	....	....	..
14	....	..	....	..	....	..	....	·086	·01
15	....	..	....	..	....	..	....	....	..
16	....	.	....	..	....	..	....	·030	·03
17	....	..	....	..	....	..	....	....	..
18	....	..	....	..	....	..	....	....	..
19	....	..	....	..	....	..	....	....	..
20	....	..	....	..	....	..	....	....	..
21	....	..	....	..	....	..	....	....	..
22	....	..	....	..	....	..	....	....	..
23	34	7	4	2	....	..	....	....	..
24	35	6	....	..	....	..	....	·005	..
25	....	..	....	..	....	..	....	·030	·07
26	....	..	....	..	....	..	....	....	..
27	....	..	....	..	....	..	....	....	..
28	....	..	....	..	....	..	....	....	..
29	....	..	....	..	....	..	....	....	..
30	....	..	....	..	....	..	....	....	..
31	....	..	....	..	....	..	....	·081	·09
Sum ..	79	16	10	3	68	9	160	·232	·20

ch which fell during each hour.

13	14	15	16	17	18	19	20	21	22	23	24	July.
..	....	....	....	....	....	....	....	....	....	....	....	1
..	....	....	....	....	....	....	....	....	....	....	....	2
..	....	....	....	....	....	....	....	....	....	....	....	3
..	....	....	....	....	....	....	....	....	....	....	....	4
..	....	....	....	....	....	....	....	....	....	....	....	5
..	....	....	....	....	....	....	....	....	....	....	....	6
..	....	....	....	....	....	....	....	....	....	....	....	7
..	....	....	....	....	....	....	....	....	....	....	....	8
..	....	....	....	....	....	....	....	....	....	....	....	9
..	....	....	·045	....	....	....	....	....	....	....	....	10
..	....	....	....	....	....	....	....	....	....	....	....	11
..	....	....	....	....	....	....	....	·010	....	....	....	12
..	....	....	....	....	....	....	....	....	·058	·032	·015	13
2	....	....	·030	....	·205	....	....	....	....	....	....	14
..	....	....	....	....	....	....	....	....	....	....	....	15
2	....	....	....	....	....	....	....	....	....	....	....	16
.	....	....	....	....	....	....	....	....	....	....	....	17
.	....	....	....	....	....	....	....	....	....	....	....	18
.	....	....	....	....	·004	....	·004	....	....	....	....	19
.	....	....	....	....	....	....	....	....	....	....	....	20
.	....	....	....	....	....	....	....	....	....	....	....	21
.	....	....	....	....	....	....	....	....	....	....	....	22
.	....	....	....	....	....	....	....	....	·020	·033	·160	23
.	....	....	....	....	....	....	·055	....	....	....	·250	24
0	·060	·085	·135	·120	·020	·132	·032	·111	·135	·020	·008	25
.	....	....	....	....	....	....	....	....	....	....	....	26
.	....	·123	....	....	....	....	....	....	....	....	....	27
.	....	....	....	....	....	....	....	....	....	....	....	28
.	....	....	....	....	....	....	....	....	....	....	....	29
.	....	....	....	....	....	....	....	....	....	·018	·014	30
0	·184	·042	....	....	....	....	....	....	....	....	....	31
4	·244	·250	·210	·120	·229	·132	·091	·121	·213	·103	·447	

The actual receipts by the Treasurer, during the Session, have amounted to £328 0s. 6d., and the whole Sessional expenses to £316 12s.; leaving a balance to the credit of the Session of £11 8s. 6d. The Council felt that they could not better employ this sum, and the funds which remained in the Treasurer's hands after the re-printing of volume I, than in putting the Society's property in order, and preparing to turn the whole of it to a practical and useful account. Their successors in office will be required to make a small outlay of a similar kind, in printing a Catalogue of the Library, and in procuring suitable furniture; after which, it is expected that the operations and the expenses of the Society will be of a uniform character from year to year.

The volume for the past session is of so much interest, that the Council did not hesitate to print a larger edition of it than of any of the previous ones. Several hundred copies are therefore left in stock, for sale to the public and to present and future members. If the whole of the volumes in stock be estimated at members' prices, their value will be about £700. If to this we add £70 of arrears, and the moderate estimate of £250 for the Library, Museum, and miscellaneous property of the Society, we have in round figures, £1000 worth of property realized during the short period of seven years. The donation of numerous valuable illustrations has contributed in no small degree to the high character which the volumes have sustained; and the Library and Museum are almost exclusively the product of donations, of which an unusually large number were made in the course of last Session.

One of the extra duties discharged during the past Session, has been the extension of that friendly reciprocity which prevails between other learned Societies and this one. Several Societies, chiefly of a scientific character, have expressed their readiness to reciprocate publications with us; and similar efforts will be made till all the principal learned Societies in the kingdom be included in the arrangement; as well as an increased number of those on the Continent and in America. In connexion with this subject it may be mentioned, that the members of the Society undertook an excursion to Shrewsbury, on Thursday the 9th of August, when they were admitted for the day to the Museum and meetings of the Congress of the Archæological Institute. On the part of this Society, and by the direction of the Council, they invited the members of the Institute to meet at some convenient time, within the limits of the two counties of Lancashire and Cheshire. Again, at the meeting of the British Association for the Advancement of Science, held this year at Glasgow, your Delegates had the pleasure to present copies of the last volume of Transactions, for the Library of the Association itself, and also to the distinguished individuals whom they enrolled last year as Honorary Members.

The Council have to deplore, in common with the members at large, the loss of several valued friends who have been removed by death. Besides ordinary members, the Society has lost two of its most prominent officers since the close of the meetings in May. The first of these was the Earl of Sefton, President of the Society, and one of its original members; and the other, still more recently, Archdeacon Brooks, one of the Vice-Presidents from the first, and who on several occasions occupied the chair at the meetings of the Society. The high estimation in which both were held, has been shown by the spontaneous tributes of numerous sorrowing survivors; and the members are fully sensible of the loss which this Society has sustained by the bereavement, as well as the public in general.

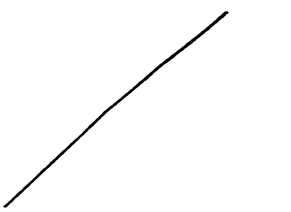
In suggesting the names of other gentlemen to occupy the places of those who retire, the Council have acted to the best of their judgment; and they have the gratification of knowing that those who succeed them will have a less difficult task than that which fell to themselves. They retire from office, grateful for the unvarying kindness and support which have enabled them to realise such a measure of success; and confident that the future progress of the Society will be the best commentary on the efforts which they have made in its cause.

The Treasurer's Balance Sheet, signed by the Auditors, was also read.

HISTORIC SOCIETY—Sessional Income, in Account with THOS. AVISON, Esq., Treasurer.

I.—THE VOLUME.	£	s.	d.	£	s.	d.
Printing, binding, &c. ..	153	13	6			
Illustrations	31	6	9			
Authors' copies	4	10	0			
				189	10	3
II.—SESSIONAL CHARGES.						
Circulars and cards.....	5	19	0			
List of Members	7	17	6			
Postage of circulars, &c..	8	1	7			
Tea, coffee, & attendance	11	18	0			
Use of St George's Hall.	15	15	0			
Advertisements	10	0	0			
Assistant Secretary.....	50	0	0			
Delivery of circulars, &c.	3	9	11			
Collector and Accountant	9	13	0			
Messages, parcels, miscellaneous	4	7	9			
				127	1	9
				£316	12	0
Balance to the credit of the Session..				11	8	6
				£328	0	6

	£	s.	d.	£	s.	d.
Arrears	22	1	0			
Entrance fees	9	9	0			
Annual subscriptions	261	9	0			
Life compositions	26	5	0			
Books sold	8	16	6			
				328	0	



£328 0

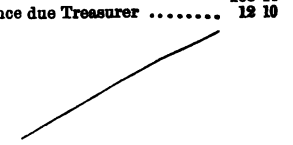
Examined by

PETER R. M'QUIE,
SAMUEL GATH, } Auditors.

HISTORIC SOCIETY—Property and Cash, in Account with THOS. AVISON, Esq., Treasurer.

I.—PERMANENT CHARGES.	£	s.	d.	£	s.	d.
Glass cases and fitting	26	4	9			
Books bought, binding, &c.	4	10	2			
New minute and receipt books	4	7	0			
New Laws	6	15	0			
Stationery	5	18	6			
				47	15	5
II.—REPRINTING VOLUME I.....				54	14	6
III.—SPECIAL EXPENSES.						
Annual Report (separate), Excursion circulars, Science in Lancashire and Cheshire, and Mr. Wright's Lecture.....				18	15	5
				£121	5	4

	£	s.	d.	£	s.	d.
Balance in Treasurer's hands, last October	97	5	11			
Balance to credit of last Session	11	8	6			
				108	14	
Balance due Treasurer				12	10	



£121 5

Examined by

PETER R. M'QUIE,
SAMUEL GATH, } Auditors.

It was moved by J. T. DANSON, F.S.S., seconded by THOMAS MOORE, SEN., E and resolved,—

That the Report be adopted; and that it be printed and circulated with Proceedings of the Society.

It was moved by JOHN POOLE, Esq., seconded by JOSEPH BOULT, Esq., and resolved

That the Abstract of the Treasurer's Accounts now read, be passed and pri with the Report.

It was moved by Dr. Hume, seconded by David Buxton, Esq., and resolved,—

That the thanks of the Society be given to all those gentlemen who have contributed Illustrations, in whole or in part, for Volume vii; and especially to Mr. Mayer, the Honorary Curator of the Society.

It was moved by Thomas Gray, Esq., seconded by Dr. Macintyre, and resolved,—

That the thanks of the Society be given to the retiring Council and Officers, for their services during the past Session.

It was moved by Joseph Boult, Esq., seconded by J. T. Danson, F.S.S., and resolved,—

That the thanks of the Society are especially due to the Rev. Dr. Hume, for his invaluable services in the office of Honorary Secretary, since the Society was established; by which its present position has been mainly secured.

A Ballot having been taken for the Officers and Sectional Members of Council, by means of the slips forwarded to the members, the result was announced by the Chairman. (See p. ii.)

On the motion of the Rev. Thomas Moore, M.A., a vote of thanks to the Chairman was passed by acclamation.

1*st November*, 1855.—MISCELLANEOUS MEETING.

J. T. Danson, F.S.S., V.P., in the Chair.

The following Donations were laid upon the table:—

From the Society. Proceedings of the Literary and Philosophical Society of Liverpool, during the 44th Session, 1854-55. No. 9.

From the Society. Proceedings of the Liverpool Architectural and Archæological Society, Volume II, Part 1, 1850-51.

From the Society. Transactions, Laws, Bye-Laws, and Sixth Annual Report of the Liverpool Chemists' Association, with list of the officers and members, also a Catalogue of the Books belonging to the Library, and a list of Donors to the Museum fund, 1855.

From the Author. Report of the General Board of Health, on a Preliminary Inquiry, respecting Great Crosby and Litherland, in Lancashire. By Robert Rawlinson, C.E., F.G.S., 1855.

From John Mather, Esq. Accounts of the Trustees of the Liverpool Docks, for the Years ending June 1838, '39, '40, '41, '42, '45, and '47.
A List of Voters in the Southern Division of the County Palatine of Lancaster, for the Hundred of West Derby.

From Dr. Hume. Geological Notices of the Environs of Glasgow, the shores of the Clyde, and the Island of Arran. By James Bryce, jun., M.A., F.G.S., 1855.
Account of the Public Dinner given to Charles Roach Smith, Esq., at Newport, Isle of Wight, on Tuesday, August 28th, and of the Conversazione at Ryde, August 29th, 1855.

From the Author. Collectanea Antiqua. By Charles Roach Smith, F.S.A., Vol. IV, Part 2.

From the Author. Views of Liverpool, about the year 1655 and in 1855, with Key. By Augustus Harding. Dedicated to the Historic Society.

Mr. Bloxam exhibited the first impression of an accurate portrait of Mr. Russell, the Crimean Correspondent of the *Times*.

Mr. Gray drew attention to a new manure, the basis of which is phosphate of lime. It is a natural deposit on some of the islands of the Gulf of Mexico. He also exhibited a blank marriage certificate from Gretna Green.

Mr. Macfie exhibited a large number of ancient objects in bronze and brass. A detailed description of them on some future occasion, was promised to the Society.

Dr. Hume pointed out peculiar characteristics of some idols of the ancient Mexicans, as figured in a large work illustrative of Mexico.*

Mr. Gray called the attention of the Society to two letters in the London *Times* of that day, one from Walter Savage Landor concerning an aged descendant of Defoe, the other from Charles Dickens, Thomas Carlyle, and John Foster, in reference to the god-daughter of Dr. Johnson. Both of these aged persons required pecuniary assistance; and Mr. Gray noticed the letters for their sakes.

The Rev. John James Moss, M.A., exhibited an interesting case of WATCHES, and read the following remarks descriptive of them.

The watches exhibited, though only the nucleus of a collection, and by no means a complete series, are interesting as individual specimens of the art at various periods, from the time of Elizabeth to the commencement of the last century. They are most of them perfect, and of very elegant design and workmanship. In addition to this, some of them are of historical interest, and they formed part of the late Mr. Bernal's collection.

No. 1 is a *memento mori* watch, of the time of Elizabeth, made by Charles Robinet,—from his name, an English maker. It has Latin mottoes round portions of the skull, which forms the case. The watch is of a similar kind, though differing in size and material, to that presented by Mary Queen of Scots to Mary Setoun of the house of Wintoun, one of the four Maries, maids of honour to their unfortunate Sovereign. This latter is now in the possession of the Lauder family. An engraving of it, in the Illustrated News Almanac for 1852, is sufficiently correct for comparison.

No. 2 is a scolloped or padlock locket-shaped watch, with crystal front and ribbed crystal back. The sides are of gilt metal. It is figured in Mr. Bernal's catalogue, and was made by Gio Balt Nascarone. It belongs to the same period as the last described.

No. 3 is a silver watch purchased at Mr. Bernal's sale, and said to have been given by Charles I to Colonel Hammond at Carisbrooke. I believe there is no account of this gift in any history or memoir of that monarch; but it was alluded to as a relic of him by Mr. Pettigrew, at the last meeting of the British Archæological Association. In the centre of the outer case there is an engraving of the monarch praying as he is represented in the frontispiece of Eikon Basilike. At the back of the inner case is the engraving of a man in a gown praying, with our Saviour above, and the legend in a scroll,—"And what I sai to you I sai unto all,—watch." I may mention it as curious that this quotation from Scripture is not exactly according to our authorized translation, the Geneva version, or that by Cranmer. The watch was made in London, by Richard Bower.

Nos. 4 to 7 are gold watches enamelled by the famous enamellers of Blois. This art, according to Mr. Morgan, in a Paper of his on watches in the Archæologia, was first used for such a purpose by Toutin in 1640, and ceased about the year 1680, or towards the close of the century. His most celebrated pupil, Vanguer Piu, painted the watch said to have belonged to Anne of Austria, which I purchased at Mr. Bernal's sale. It is indeed a specimen as worthy of her taste as of the artist's celebrity. (*See plate.*)

Another of Toutin's pupils named Huoud painted the watch representing the Roman lady who nourished her father condemned to starvation. She was permitted to see him daily—and her history has, as you are all aware, been immortalized by Byron.

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* "Viage Pintoresco y Arqeolojico sobre la parte mas interesante de la Republica Mejicana, a los años transcurridos, des de 1829 hasta 1834, por le Arquitecto Don Carlos Nebel, 50 laminas Lito grafidas, con su texto explicativo. Paris y Mejico MDCCCXXXIX."

This watch belonged to Prince Albert's mother, the Duchess of Saxe-Coburg, and was purchased at her sale in 1852. It was made at Geneva, by Abraham Carl Liatte.

The enamelled watch No. 6, is by an unknown artist. The exterior is very minutely finished with classical subjects on the front and back, but the landscapes in the interior are less beautiful. The works were made at Amsterdam by Josephus Norris.

The enamelled watch No. 7 is interesting as containing in the inner case a portrait of the Earl of Rochester, and on the dial one of Charles II. They are probably the work of a less eminent artist than Piu or Huoud, but are nevertheless of considerable merit. The works are by Robert Dingley, London.

No. 8 is an alarum pocket clock. The case is made of brass, with open work for the emission of sound. The maker's name is Pierre Maingot, Paris—date probably early in the 17th century. It has a curious key.

No. 9 an alarum watch of silver. The case is cut in an intricate pattern, for the emission of sound. Date, the end of the 17th century.

No. 10, a gold watch made in Liverpool during the latter half of the last century, by Ralph Eden. The outer case is much older, and of the kind fashionable during the reign of Queen Anne.

The following Paper was then read:—

On the Saxon Element in the Diction of English Poetry. *By David Buxton, Esq.**

8th November, 1855. LITERARY SECTION.

The Rev. Dr. Thom, V.P., in the Chair.

The following Donations were laid upon the table:—

From the Society. Proceedings of the Society of Antiquaries of Scotland, Part iii, 1855.

From the Society. Journal of the Society of Arts and of the Institutions in Union, Vol. iii, Nos. 147, '48, '49, '50.

From the Society. Journal of the Statistical Society, parts 1, 2, and 3, for 1855.

From Lord Londesborough. Miscellanea Graphica, parts 5 and 6.

From James Newlands, C.E., Borough Engineer. List of Sewers in the Borough of Liverpool, 1855.

From Robert Rawlinson, C.E., F.G.S. Report of the Committee of Scientific Inquiries, in relation to the Cholera Epidemic of 1854.†

Appendix to ditto.

Letter from the President of the Board of Health, accompanying a Report of Dr. Sutherland, on the Cholera of 1854 in London.

Report on the Results of the different modes of Treating Cholera in London.

Report on the Results of the different modes of Treating Cholera in the Provinces.

Report of the Medical Council to the President of the General Board of Health, in relation to the Cholera Epidemic of 1854.

Dr. Hume exhibited an ancient sheep-bell, which had been dug up near Llanbadrig, in Anglesea. It is identical in form with the hawk's bell of heraldry; and is supposed to belong to the 15th century.

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* Transactions, p. 35.

† Mr. Sansom drew attention to twenty-seven beautifully executed plates in this volume. They represent the microscopic appearance of the water with which various parts of London are supplied. This led to a notice, by Mr. Boult, of some peculiarities of the Liverpool water.

DIAL
FRONT
BACK
ROUND THE RIM.
ORNAMENT
INNER CASE
INNER CASE
OPPOSITE DIAL.
OPPOSITE WORKS

Dr. Hume also drew attention to a pentagonal crystal of stone, about two inches long, and half an inch in diameter. A stone at the iron works of Ystalyfera, near Swansea, had been nearly in a state of fusion for a considerable time; and on the fire which it sustained being blown out, it split into crystals, of which this was one.

Mr. Danson, V.P., read some remarks on the Paper of Mr. Buxton, which had been laid before the Society at the previous meeting. See note, page 48.

The following Paper was then read:—

LIVERPOOL: MEMORANDA TOUCHING ITS AREA AND POPULATION, DURING THE FIRST HALF OF THE PRESENT CENTURY. *By J. T. Danson*, F.S.S., V.P.*

15th November, 1855. SCIENTIFIC SECTION.

THE REV. DR. THOM, V.P., in the Chair.

Mr. Thomas Kyffin Roberts, of St. Asaph, was duly elected a Member of the Society.

The following Donations were laid upon the table:—

From the Society. Journal of the Royal Geographical Society, with maps and illustrations, vol. XXIV, 1854.
Address at the Anniversary Meeting of the Royal Geographical Society, by the Earl of Ellesmere, K.G., D.C.L., President.

From Professor Sedgwick. A Synopsis of the Classification of the British Palæozoic Rocks, with a systematic description of British Palæozoic Fossils, by Professor Sedgwick, of Cambridge, and Professor McCoy, now of Melbourne University. 2 vols. 4to.

From Sir John Richardson, C.B., M.D. Magnetical and Meteorological Observations at Lake Athabasca and Fort Simpson, by Capt. J. H. Lefroy, Royal Artillery, and at Fort Confidence, in Great Bear Lake, by Sir John Richardson. Printed by order of Government, 1855.

From the Author. Four Papers, viz.: (1) On the Action of Organic Acids on Cotton and Flax Fibres; (2) On the Action of Gallic and Tannic Acids in Dyeing; (3) On the Adulteration of Oils, by F. Crace Calvert, F.C.S., Professor of Chemistry, Manchester; and (4) On Alloys, by Professor Calvert and R. Johnson, Esq., Manchester.

From the Author. Paper on Ice Impediments in Australian Voyages, by John Thomas Towson, Esq.

From J. C. Dalton, Esq. Third Annual Report of the Committee of the Free Public Library and Derby Museum of the Borough of Liverpool; October, 1855.

From William Blackmore, Esq. Minutes of Evidence on the Liverpool Election Petition, taken before the Select Committee, with the Proceedings of the Committee, 1853.

From Thomas Moore, Sen., Esq. Newspaper Slip—Advice to Emigrants to New Zealand.

Mr. Whitehead exhibited a very interesting specimen of the shell known as *Voluta punctata* (Swainson), or *Aulica punctata* (Gray).

Mr. Sansom exhibited a print from a highly magnified photograph of *Navicula angulata*. It was supposed to be magnified 16,000 diameters, and the spots formerly supposed to be lines were seen as dots of a hexagonal shape. These dots had been

* Transactions, p. 23.

measured, and were found to be 52 thousandths of an inch in diameter, in their natural state.

Dr. Hume exhibited a portable Gyroscope, lent for the purpose by Mr. Chadburn of Lord street, and drew attention to the various motions of which it was susceptible. He also explained to the meeting the scientific* principles which were thus illustrated.

Mr. H. Meeson, on the part of Mr. Agnew, of Manchester, laid before the Society a selection of sixteen Photographs, from the series of Fenton's Crimean Illustrations. They consisted of six portraits of Generals, and ten Landscapes and Groups, in and near Balaclava.

The following Paper was then read:—

DESCRIPTION OF A PATENT ABACUS. *By J. Gregory Jones, Esq.*

This Abacus was invented and patented by Mr. Jones, who is one of the officers of the Collegiate Institution. It was placed in the meeting-room. The object of it is to familiarize the pupils of our Schools with the operations of Addition; and thus to save the time of both teacher and pupils, or to afford greater leisure for the explanation of principles. By the simple movement of a slide, a vast number of combinations can be obtained, each of which may be distinguished with facility, by a number, for reference to a printed Key. This states the correct sum of every arrangement of columns of figures, and thus affords an easy means of comparing the result which the pupil produces. The practical mode of using the instrument was shewn; and some of those to whom its use had been familiar, displayed great celerity and accuracy in the process of adding.

6th December, 1855. ARCHÆOLOGICAL SECTION.

SAMUEL GATH, ESQ., in the Chair.

The following gentlemen were duly elected members of the Society:—

William Allcard, Esq., Bank House, Warrington.
Edward Batty, Esq., 34, Stafford Street.
J. Black, M.D., F.G.S., Southport.
John Bowes, Esq., Warrington.
F. Crace Calvert, F.C.S., &c., Royal Institution, Manchester.
James L. Crosse, Esq., 6, Sandon Terrace.
Edward Estill, Esq., Orange Court, Castle Street.
David Johnson Macfie, Esq., Bachelor Street, Dale Street.
John Newton, Esq., 15, West Derby Street.
William R. Sandbach, Esq., Bank Buildings, Cook Street.
John R. Shawe, Esq., Arrowe, Woodchurch, Cheshire.
George F. Wilson, F.R.S., F.S.S., Belmont, Vauxhall, London.

The following Donations were laid upon the table:—

From the Institute. The Archæological Journal, published under the direction of the Central Committee of the Archæological Institute; volumes VI, VII, VIII, IX, X, XI, and parts 1 and 2 of volume XII.

* These experiments were exhibited by M. Foucault, the inventor, at the Meeting of the British Association at Liverpool; and an account of them is given in the Report for that Meeting, Proceedings, p. 56, under the title "*Nouvelles Experiences sur le Mouvement de la Terre au Moyen du Gyroscope.*" An account is also given in the *Comptes Rendus de l' Académie des Sciences.* On March 12th, 1855, the nature of these experiments was explained at the Ashmolean Society, Oxford, by the Rev. Robert Walker, M.A., Reader in Experimental Philosophy. Allusion was also made to them by the President, Lord Wrottesley, at the Anniversary Meeting of the Royal Society, November 30th, 1855, in presenting the Copley Medal to M. Foucault.—*Proceedings of the Royal Society*, volume vii, p. 574.

From the Cambrian Archæological Association. Archæologia Cambrensis, for July and October, 1855. Third series, Nos. 3 and 4.

From the Author. British Antiquities; their present treatment and their real claims, by A. H. Rhind, F.S.A. London and Scotland. Pamph., 1855.

From the Editor. Parallel Passages from two Tales, elucidating the origin of the Plot of Guy Mannering, edited by Gilbert James French, Corr. F.S.A., Scot., and printed for presentation. Pamph., 1855.

From the Rev. P. S. Dale, M.A. Thirteen Pamphlets, principally from the earlier press of Liverpool, consisting of the following:—

The Dispensary, a Poem, by James Clarke; Liverpool, 1783. A Sermon, preached before the Mayor and Corporation, at St. George's Church, Liverpool, by the Rev. Samuel Renshaw, M.A.; London, 1793. Miscellany Poems on moral subjects; Chester, 1750. A Sermon preached at the Assizes held at Lancaster, 19th August, 1787, by the Rev. Thomas Wilson, of Clitheroe, author of the Archæological Dictionary; Leeds, 1797. Christian Knowledge and Universal Privilege, a Sermon preached at the opening of the Warrington Blue Coat School, by the Rev. Edw. Owen, M A.; Warrington, 1779. A Charge delivered to the Clergy in the Diocese of Chester, in 1814, by Geo. H. Law, D.D., Bishop; Chester, 1814. Assize Sermon preached at York, by the Rev. John Vause, M.A.; Liverpool, 1811. Commencement Sermon at Cambridge, by Law, Prebendary of Carlisle, July 1, 1804. Charge delivered to the Clergy of the Diocese of Chester at the primary Visitation, 1825, by C. J. Blomfield, D.D., Bishop; London, 1825. Remarks on Mr. Lancaster's System of Education, by William Fell, Teacher, Warrington; London, 1811. Pastoral Thoughts on the Aspect of the Times, in four Sermons, preached at St. George's, Everton, by the Rev. P. Buddicom, M.A., F.S.A.; London, 1830. Three Sermons on Article xvii of the Church of England by the Rev. Edward Hull, M.A.; Liverpool, 1821. A Sermon preached at Wigan Church, and published by request; Liverpool, 1753.

Dr. Hume exhibited a gutta percha impression of a leaden seal, found at Nantwich, in Cheshire, in May last. The original was about six feet beneath the surface of the Crown Inn yard. It is now in the possession of Mr. H. Ecroyd Smith, author of the Reliquiæ Isurianæ. The legend is SIGILL SIMONIS FIL BAN (ulfi).

Dr. Hume also drew the attention of the Society to some numbers of the *Illustrated Sydney News*, which seemed to have been of great interest as an exposition of Colonial life. The 90th and concluding number contained three Australian scenes, and four illustrations of native Zoology.

An ancient vase was handed round for inspection, the property of Valentine Bird, M.D., of Seacombe. It was found in South America, in the excavations for the Lima and Arica Railway, and contained human bones in a state of great preservation.

Mr. Mayer exhibited an elaborately-made Tea Caddy of the usual form, but very large. The ground work is wood, over which is laid in mosaic work a variety of patterns in squares and stars, and amongst the rest are masonic emblems—the level, rule, compasses, pillars, sun, moon, &c. On the panel in the front are two subjects in engraving from copper plates, one representing the fable of the bundle of sticks, and the other a jolly looking landlord, whose appearance shews that he has paid attention to creature comforts, some of which surround him, whilst he is very anxiously watching the tap of a large hogshead of ale which is running into one of the brown jugs of the day. The whole of the ornaments are composed of pottery work, and display great ingenuity in the adjustment of the pieces and the arrangement of the colours. Probably all which were then known are displayed; they thus shew in an interesting manner the state of the manufacture of earthenware in Liverpool about 1780.

Mr. Mayer also exhibited an Ivory Comb measuring 7 inches long by 5¼ broad. It is of the usual form, of the large mediæval specimens preserved in the cabinets of

iquaries. The teeth are placed on each side, and are 1¾ inch long; those on one e are extremely heavy and thick. At each end of the teeth are compartments filled h scrolls and flowers. Extending the whole length of the centres are two subjects high relief, one of them representing a hunting scene, and the other a hawking ne. From the costumes it is thought to have been made about the period of Mary een of Scots.

Mr. Gray exhibited a copy of Hogg's Queen's Wake, which had been pre- ıted by the author to his nephew, Mr. James Gray. It was interesting from ıtaining in the margin an autograph key to the modern poets, indicated under the dic titles.* Mr. Gray exhibited with this, the Album of Miss M. A. Browne, (the ; Mrs. James Gray), containing original poems and drawings of great interest; also olume of MS. letters from the various literary persons with whom she had been correspondence, including many from Miss Mitford, Mrs. Hofland, &c.

This was the edition of 1822, which contained numerous additions to the original Poem. ; following are the principal persons indicated, and the respective descriptions of them :—

1st Bard—DAVID RIZZIO.

"The stranger youth,
The gaudy minstrel of the south,
Whose glossy eye and lady form
Had never brav'd the northern storm."

8th Bard—Mr. WM. TENNANT, Author of "Anster Fair," afterwards Professor in the University of St. Andrews.

"The Eighth was from the Leven coast."

"Mounted the Bard of Fyfe on high,
Bushy his beard and wild his eye;
His cheek was furrowed by the gale."
* * * *
"Calm and benignant as a child,
Yet spoke to all that viewed him nigh;
That more was there than met the eye."

9th Bard—PROFESSOR WILSON.

"His looks were fair as sunny sky,
His cheek was ruddy, bright his eye,
His speech was like the music's voice
Mixed with the cataract's swaying noise;
His harp strings sounded wild and deep,
With lulling swell and lordly sweep."

10th Bard—"The Author, JAMES HOGG."

"The Bard on Ettrick's mountain-green
In nature's bosom nursed had been."

15th Bard—"The Rev. JAMES GRAY, afterwards my brother-in-law.—J. H."

"The next was bred on southern shore,
Beneath the mists of Lammermore.
* * * *
Well toned his voice of wars to sing,
His hair was dark as raven's wing;
His eye an intellectual lance
No heart could bear its searching glance;
But every Bard to him was dear,
His heart was kind, his soul sincere."

16th Bard—"ALLAN CUNNINGHAM."

"The next was from a western vale,
Where Nith winds slowly down the dale;
Where play the waves o'er golden grain,
Like mimic billows of the main.
Of the old elm his harp was made,
That bent o'er Cluden's loneliest shade.
* * * *
That Harp could make the matron stare,
Bristle the peasant's hoary hair,
Make patriot breasts with ardour glow,
And warrior pant to meet the foe."

Mr. Mayer read the following transcript of a letter, the original of which is in the possession of J. Y. Akerman, Esq., Sec. S.A. It was written by Cornet Pease to his brother-in-law, Captain Adam Baynes, of the Parliamentary Army. The brother Richard mentioned in the postscript, was a Captain Richard Pease, also a Roundhead officer. The letter alludes to the unfortunate termination of Sir George Booth's rising in favour of Charles II.

Dr Sr

I suppose ere this you have an accot of the the (*sic*) great victory obtained with little bloodshed upon Friday last. This day Chester was surrendered to my Lord Lambert without any termes but his own, some of the enimyes horse went hence last night and this morning to the number of 300 to chirt castle in Wales under the comand of Sr Thomas Middleton, the owner of it, to which place our Troope and 3 more of my Ldr Regimt & some foote are marchg this afternoone, tomorrow god willing I purpose to be with them, they by this night at Rixam. Ld Kilmurrey, Sr Will. Neale and many other persons of quality are taken, I desire you will please to prsent my choyce respects to all your sweet babyes and my dear sister & all friends & accept the same yourselfe

Frm

Sr.

Your most affectio: & obliged Brother

J. Pease.

Chester, Aug. 25. 1659.

Sr

Dr Devevier* is here and presents his respects to you and yor pray remember me to Bro. Richard and his wife if they be in towne.

Mr. Gray exhibited an interesting portrait of Milton, apparently of the date 1650 to 1670, painted within the separable sides of a Spanish dollar.

In illustration of his Paper to be read, Mr. Stonehouse exhibited a view of Dalton Castle, and a plan of the Pile of Fouldrey. Mr. H. Johnson also exhibited specimens of Iron Ore from Cleator, near Whitehaven.

The Secretary announced that a room had been taken for the reception of the Society's Library and Museum, at No. 57, Ranelagh Street.

The following Paper was then read:—

A Day in Low Furness. (Abridged.) *By James Stonehouse.*

The districts of High and Low Furness abound with objects of interest, in which the antiquarian, the geologist, the botanist, and the artist, would delight. Low Furness is bounded by High Furness on the north, by the Leven river and Morecambe Bay on the east, by the Irish Sea on the south, and by the Duddon river on the west. The boundary line between High and Low Furness may be drawn from Aldingham on the Leven to Kirkby Ireleth on the Duddon. Furness was conquered by Agricola in his second campaign, A.D. 79, and it is said that at Dalton there was a Roman Station. The Romans made a road through Furness, remains of which were first discovered in March, 1774, near Mountbarrow House, and under Bardsea park wall another portion of it was found. In 1813, an ancient road, paved with large stones, was met with at the head of Goldmire. It would seem, therefore, that the Romans entered Furness by Conishead, whence their road proceeded to Thornwest, through Streetgate, to the place where it joins the new turnpike road to Ulverstone. Hence its direction is by Lindell to Dalton. At the cross at Dalton it turns up Scalegate to Duddon Sands.

After the Romans, the Britons occupied the country; the Danes succeeded, as the numerous Danish words still prevalent in the vicinity shew. Next the Saxons, who were followed by the Normans. Though the name of Furness is not mentioned in Doomsday Survey, yet numerous places in it are set down, as well as the owners

* Some letters of this individual will be found in the Proceedings of the Society of Antiquaries.

of lands, and the extent of territory held by each. It was in a highly cultivated state, as the Survey states that sixty ploughs were owned by the chieftains and their tenants.

We first visit Walney Island, about ten miles long by one in breadth. It contains two hamlets, North Scale and Bigger, and between them is a small Chapel of Ease to Dalton. At Bigger there is an ancient dike, constructed originally by the monks of Furness, with great care, to ward off the sea. It is a mile in length, with a foot walk on the top. There are other dikes, which the islanders are obliged to keep in repair, as they hold their lands on the condition that if any are destroyed by the sea, the remainder must pay the rent of those which have disappeared, as well as their own. The sea broke over in 1774, and in 1796, and occasionally since. About fifty years ago, some curiously shaped cannons and other war implements were discovered, cast on the island probably from a wreck, in the time of Richard II.

There is a revolving light on the south end of the island. From Walney we proceed to Fouldrey, where is the fortress known as the Pile of Fouldrey Castle, constructed (Camden) about 1327, as a refuge for the monks of Furness in time of need. The published views of this ruin do not convey the best idea of what it is like. Fouldrey island has to a great extent been washed away. The castle covered about three acres, and consisted of a keep or central tower, an inner wall, a moat, now nearly filled up through lapse of time, and an outer wall. The ruins are curious, and deserve a detailed examination. Lambert Simnel landed here in 1487, and proceeded thence to Swarthmoor and Cartmel, whence he marched to Stoke-on-Trent. Of the Furness gentry he was joined by Sir Thomas Broughton, who was killed in the battle, or disappeared. Mr. Roby founds a story on this circumstance in his "Traditions of Lancashire." From the Pile of Fouldrey we proceed to Furness Abbey, which is four miles distant from the railway station on Roe Island. The ruins are said to stand on sixty-five acres of ground, and are situated in a glen called Beckansgill, or the glen of the deadly nightshade. The abbey, dedicated to St. Mary, was founded on the nones of July, 1127, by Cistercian monks, with Ewan, their first abbot. It was second in importance only to Fountains in Studley Park. At the dissolution in 1537, it had a revenue of £805 16s. 5d., exclusive of the woods, pastures, fisheries, saltworks, mills, &c. Its hospitality was great, and education was not neglected. Of the church there are remains of the chancel and vestry, the north and south aisles, the lofty arches of the nave, and the belfry or western tower, from the top of which there is a fine view of the surrounding country. The sedilia, carved, as it is supposed, by Italian artists, form some of the finest specimens extant in freestone. Our space does not admit a more detailed notice of this splendid ruin.

Dalton Castle, distant from the abbey about a mile and a half, was erected by the Furness abbots for defence and for civil purposes. It is a square block of building, and its walls are six feet thick. In front of it the market was held till it was removed to Ulverstone. Dalton is supposed to have been a Roman station, but the examination of a mound near the church did not lead to any results. Some copper weapons, probably celts, were discovered in the vicinity many years ago; and in 1804, a coin inscribed with the word SOL in Roman characters on each side. In 1799, in sinking a shaft for iron ore near Dalton, there was found at the depth of thirty feet, the trunk of a large oak tree, which had assumed the colour of ebony. The church bears date about the fifteenth century. In it there is a large stone font, curiously carved, which was brought from the abbey. Mention is made in the "Tatler" of a great festival at this place, at which a great hunt took place on the morning, and a grand ball of the neighbouring gentry in the evening.

From Dalton we proceed to Lindell, where are extensive iron mines, some of which have been worked for centuries. The Romans were acquainted with the fine iron ore of this district, some of which yields 75 per cent. of iron. The Britons, Saxons, &c., in their turn knew their value, and the abbots of Furness Abbey had the sole management and profits of the mines. At Lindell Moor, on the 28th Sept., 1643, the king's forces were beaten by the parliamentarians.

From Lindell we proceed eastward to Urswick, which consists of Little and Great Urswick. At the former is a curious place called the Stone Walls, situated in some

fields at the back of the Swan public-house opposite the post-office. Large quantities of stones are found in several fields, lying scattered about, and preserving now but little of their original condition. It is difficult to trace the plan of the structures that may have existed in bygone days. Are they druidical remains? Are they the remnants of some Sistuntian village? Or some temple of a primitive race?

Urswick Church is a small edifice, erected about fifty years after the Conquest, and is dedicated to St. Mary-in-the-Field. On the western side there is a much mutilated figure of the virgin and child. The bell bears an inscription to the effect that it was the gift of William de Harrington and his lady Margaret. The interior of the church has been lately decorated. Stained glass windows have been put in the eastern end and southern side, and encaustic tiles placed in the chancel. The monks of Furness owned the advowson before the demolition of the monastery. In 1774 a curious copper vessel, weighing three pounds two ounces, was found near the church, and in 1798 a silver coin of Otho.

From Urswick we proceed to Birkrigg, a moorland overlooking Morecambe Bay—the village of Bardsea stands at its base. From the most elevated point of Birkrigg a most extensive view may be had, embracing the Isle of Man, Cumberland, Westmorland, and the mountains of Lancashire. The moor is scattered all over with stones of every size and shape, presenting a most singular appearance. Are not these stones the remains of some town of yore, whose name and inhabitants have been forgotten?

At Aldingham there is a curious remnant of antiquity, viz., a mound and ditch and an enclosure. The mound, which is about thirty feet high is to a considerable extent washed away by the sea. It has been considered to be the mote hill, or place of assembly of the lords of Aldingham. It is said that Aldingham Church stood in the centre of the village at the conquest, and that the encroachments of the sea have left it in its present position, and several villages in its vicinity are supposed to have been swallowed up in the sea. Proceeding southward we approach the ruins of Gleaston Castle, the residence and fortress of the lords of Aldingham. In the beginning of Mary's reign it belonged to the Duke of Suffolk, father of Lady Jane Grey. It well deserves a visit by the antiquary. The way back to Pile Harbour presents no object worthy of much note, except the picturesque village of Leece scattered round a large tarn.

13*th December*, 1855. LITERARY SECTION.

J. T. Danson, F.S.S., V.P., in the Chair.

The following gentlemen were duly elected Members of the Society:—

H. C. Barton, Esq., Fishergate, Preston; and F. Steiner, Esq., Hyndburn, Accrington.

James Aspinall Tobin, Esq., late Mayor of Liverpool, having signified his wish to remain a Member of the Society, was enrolled without election or entrance fee, in accordance with Law xiii.

The following Donations were laid upon the table:—

From the Society. Transactions of the Philological Society, volumes I, II, III, IV, V, and VI; Transactions eleven parts, for 1854; Transactions, parts 1 to 6, for 1855. Appendix, containing List of Members, Laws, &c.; Dictionary of the Dakota Language, in two parts, 1st English, Circassian, Turkish; 2nd Circassian, English, Turkish, with a preface, and a table of the alphabet adopted to express the Adee-Ghey language.

From the Society. Memoirs of the Literary and Philosophical Society of Manchester, vol. XII, (second series), 1855.

From W. B. D. D. Turnbull, Esq., Hon. Mem. Several copies of an Essay on Ships' Compasses, by Thomas Allan, C.E., London.

From the Abbé Cochét. Notice Biographique sur M. Nell de Bréauté, Conseiller General de la Seine Inferieure.

From Charles Roach Smith, F.S.A. Duplicate of the Abbé Cochét's Memoir of M. Nell de Bréauté.

Mr. Marsh exhibited several Autographs, lent for the purpose by Mr. Jones, of Nantwich. They were (1) Two Reprieves, signed by Charles I; (2) A State Document, bearing the signature of Sir Walter Raleigh; (3) A Warrant under the hand of the lord keeper William, Bishop of Lincoln, the Earl of Arundel and Surrey, Viscount Conway, Sir Thomas Edwardes, Sir John Suckling, Sir John Coke, and Sir Richard Weston, directed to Bridgeman, Bishop of Chester, whose signature is endorsed, relating to a Popish conspiracy in the year 1625; (4) A Letter from Lady Hatton, widow of Edward Coke, to Sir Randolph Crew, requesting his arbitration in a dispute between herself and her late husband's executors.

Dr. Hume exhibited a pair of Wedgwood Cameos, belonging to a gentleman in Seacombe, representing Josiah Wedgwood and his Wife.

The Chairman announced the death of Joseph Brooks Yates, Esq., F.S.A., F.R.G.S., who for more than forty years had been in some way connected with the progress of Literature and Science in this neighbourhood. He thought the Society might with great propriety put upon record, their sense of his loss.

Another member, at the request of the Chairman, stated some facts* respecting Mr. Yates's connection with the local literature.

It was then moved by Thomas Sansom, A.L.S., seconded by the Rev. Thomas Moore, M.A., and resolved—

That this Society learns, with deep regret, the death of Joseph Brooks Yates, Esq., and takes this the first opportunity that presents itself, to express on behalf of its members, the deep sense of his services to the Literature and Science of the district, a feeling which they possess in common with all who are or have been connected with those pursuits.

The Secretary was directed to forward a copy of this resolution to the family of the deceased gentleman.

The following Paper was then read:—

THE ENGLISH POOR LAW SYSTEM, VIEWED IN RELATION TO EDUCATION AND MORALS; *By the Rev. Thomas Moore, M.A.*†

20th December, 1855. SCIENTIFIC SECTION.

HENRY DAWSON, Esq., in the Chair.

The following gentlemen were duly elected Members of the Society:—

William Dobson, Esq., Chronicle Office, Preston.
George Grazebrook, Esq., 40, Canning Street.
The Rev. P. R. Robin, M.A., Barnston, Cheshire.
William Turner, Jun., Esq., Storeton House, Storeton, Cheshire.

The following Donations were laid upon the table:—

From the Society. Memoirs of the Literary and Philosophical Society of Manchester, vol. XI, (second series), 1854.

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* See Gentleman's Magazine for January, 1856.
† Transactions, p. 181.

From the Society. Sixteenth Annual Report of the Royal Botanical Society, 1855.

From the Mayor of Manchester. Third Annual Report to the Council of the City of Manchester, of the working of the Manchester Free Library.

From Thomas T. Wilkinson, F.R.A.S. The British Oracle; being dissertations on Philosophy and Mathematics, volume I, 1769. The Lady's and Gentleman's Diary for 1855.

From John Rooke, Esq., of Akehead, Wigton, Cumberland. Geology of the Lake District. Tables of Proportional Results of Variable sums of Bank Notes on the relative Price of Wheat.

Mr. Sansom exhibited a specimen of *Sphæria Robertsi* (Hook), a plant-shaped parasite of the caterpillar. Also *Hepialus Virescens* (Doubleday), a New Zealand moth.

Mr. Sansom also exhibited several Diagrams illustrative of his Paper.

Dr. Hume laid before the meeting a selection of thirty-two Medallions and Seals, from a large collection in the possession of Mr. James Coey. The collection, consisting of more than 500 in all, illustrates the Roman Emperors, the reign of Napoleon I, the Kings of France, the Kings and Queens of England, ancient Philosophers, and allegorical subjects.

Mr. Jacob exhibited a large Yataghan, the scabbard being silver, and the hilt ivory inlaid with silver. The blade was of pure Damascus work.

The following Papers were then read:—

On a Fungoid Disease affecting the Pear Tree. *By Thomas Sansom, Esq.**

General Remarks on the Natural History of the Shores of the Mersey. *By Richard A. Tudor, Esq.*

The author entered into the general appearance of the marine zoology of the neighbourhood, giving notices of the habits of many of the species. The following are extracts:—

"A small cone-shaped tube is found in great abundance on the sands near to the last tide-mark, formed in the most symmetric and architectural manner by grains of sand. These are agglutinated together by a secretion from the animal's own body. The inhabitant is a worm, (*Pectinaria Belgica.*) In the living state, it is buried in the sand; we find only the empty tube. There are other tubes frequently met with, about eight or ten inches, with a fimbriated extremity, and covered with fragments of shell, and particles of sand agglutinated by a viscid secretion from the animal's body. This is also the habitation of a marine worm (*Terebella conchilega*), but it is generally buried in the sand, out of harm's way, sometimes penetrating to a great depth. These animals are commonly found midway between the tide-marks.

"Suddenly, in the direction of low water, may be observed something in appearance like a puff of black smoke, which, if watched, will be as instantly changed into a white sheet, and again altered, for a moment, so as to be quite unnoticeable. These appearances and changes are produced by a large flock of marine birds, called Purre (*Tringa Cinclus*); and the change in appearance is caused by either the back or breast feathers presenting themselves to the sun's light. This is effected in a wonderful manner by a simultaneous movement of the whole flock. Occasionally also may be seen the hooded crow (*Corvus cornix*), but only in the winter months. Not more than two or three at a time, rarely more, may be seen, and sometimes a solitary bird. They are migratory, and generally arrive with the woodcock.

"During the summer months the attention of the visitor is directed to a peculiar ocular deception, produced by the refractive condition of the atmosphere. When the tide is out, he observes, looking north, a mile or two distant, a very interesting panorama; the objects being much confused, and appearing as if in a glassy lake,

* Transactions, p. 193.

when in fact they are on dry ground. This deception is produced by the heat of the sun, exhausting the moisture from the sands, and forming quite a mirage. This frequently takes place in the sandy deserts of Arabia, deceiving the traveller when parched with thirst.

"In many patches, nearer to high water mark, on the shore, may be observed millions of worm casts. These are produced by the lob or lug-worm A few inches from the cast may invariably be seen a round hole, through which the animal came and fed while the tide covered the surface; and the cast is deposited after the nutritious portions have been extracted. These creatures are very much sought for by fishermen, and when first taken, they display the prismatic colours very beautifully by their movements. The rings of the head of this animal are very peculiarly constructed, forming a regular cone, which it has the power of drawing in and extending as circumstances require. In these localities the ripple marks, formed by the recent action of the water, present very beautiful appearances, and the shade produced by the varying altitude of the sun cannot but attract the attention of the observer. They partake of great similarity in shape and character.

"On the sands at Little Brighton is found, in abundance, one of the beautiful tribe of beetles, (the *Cicindela hybrida*,) at all times welcome to the collector.

"On the surface of the loose sands, appearing as a dark powder, will be found *Iserine*, a semi-metallic substance. It is also found on the Cheshire side of the Mersey, and is highly magnetic. The lens being at hand, it is interesting to examine a few pinches of the dry sand, by transmitted light, on a little window glass."

3rd January, 1856. ARCHÆOLOGICAL SECTION.

THE REV. DR. THOM, V.P., in the Chair.

The following gentlemen were duly elected Members of the Society:—

Thomas Bouch, Esq., 1, Oldhall Street.
Thomas A. Welton, F.S.S., 147, Fenchurch Street, London.
The Rev. Thomas Staniforth, Storrs, Windermere.

The following Donations were laid upon the table:—

From the Society. Report presented to the Cambridge Antiquarian Society, at its 15th General Meeting, May 14th, 1855.

From the Society. Proceedings and Transactions of the Kilkenny Archæological Society, for May July and September, 1855.

From the Rev. J. S. Howson, M.A. First Annual Report of the Government School of Art, in connexion with the Collegiate Institution, Liverpool, 1856.

From the Society. Proceedings of the Numismatic Society, Session 1853-54.

From the Archæological Institute. The Archæological Journal for Sept., 1855.

From the Society. Annual Report, and Selection of Papers read before the Literary and Philosophical Society of Leicester since its formation, 1855.

From la Société Archæologique de l' Orleanais. Etude sur la Roman de la Rose par M. P. Huot, et Rapport par M. Mange du Bois des Entes, 1853.

From the Author. Rapport sur les Fouilles pratiquées en Village de Vieux, pendant les annees 1852, '53, '54, par M. A. Charma.

From C. R. Smith, Esq. Discours prononcé a la Seance publique, du 29 Aout 1852; par M. J. Garnier, Directeur.

From Lord Londesborough. Miscellanea Graphica, No. 7.

From Henry Johnson, Esq. An Act of Parliament *temp.* George II. (1754), for making navigable the river called Sankey Brook, and for adjusting the measure of coal brought down the said Brook, and sold within the town of Liverpool.

From the Rev. T. B. Ingham. A Sacred Poem, by W. Colton, Esq., B.A.

Dr. Hume exhibited three ancient parchments, relating to families and property in Cheshire and Flintshire. They formed part of a collection of similar documents, 59 in number, in his possession.

Mr. Mayer exhibited a gold torque and seven armillae recently found in Ireland. They were all of solid gold, and nearly pure. They were part of a "find," the value of which in gold only, was estimated at £1,200.

The Rev. W. B. Grenside exhibited a silver spoon and four coins, recently found near Thurland Castle, Lancashire; together with numerous gold and silver coins of the periods of the Edwards and Henries. Mr. Grenside also exhibited several rare and interesting medals in silver and bronze.

The first portion of the following Paper was then read:—

ON THE STATE OF THE WESTERN PORTION OF THE ANCIENT KINGDOM OF NORTHUMBERLAND, DOWN TO THE PERIOD OF THE NORMAN CONQUEST. *By John Hodgson Hinde, Esq.**

10*th January*, 1856. LITERARY SECTION.

J. T. DANSON, ESQ., V.P., in the Chair.

The following Donations were laid upon the table:—

From the Royal Asiatic Society. Journal of the Society, vol. xi. part 1, 1849; vol. xii. pts. 1 and 2, 1849, '50; vol. xiii. pts. 1 and 2, 1851, '52; vol. xiv. pt. 1, 1851; vol. xv. pts. 1 and 2, 1853, '55; vol. xvi. pt. 1, 1856.

A descriptive catalogue of the Historical MSS. in the Arabic and Persian languages, in the Library of the Royal Asiatic Society; compiled by W. H. Morley, M.R.A.S., 1854.

Essay on the Architecture of the Hindus, by Rám Ráz, native judge in India, 4to., with 48 plates, 1834.

Vestiges of Assyria, being three large coloured maps, exhibiting (1) the Remains of Ancient Nineveh, and the site of the modern Mosul; (2) Plans of Nimroud and Selamiyeh; (3) the country included in the angle formed by the rivers Tigris and Upper Zab.

From J. T. Danson, Esq. Five Letters on Tenant Farming.

From George F. Wilson, F.R.S. New Process for obtaining Glycerine.

Mr. Mayer exhibited on behalf of Dr. Bell, of London, an early edition of Reynard the Fox, copiously illustrated with quaint woodcuts, and printed in the Low German dialect, in 1660.

Mr. Sansom laid before the meeting a series of 28 photographs, the property of J. P. G. Smith, Esq. They represented various edifices, and views in the interior of Sebastopol. The most remarkable were a large view of the Church of St. Peter and St. Paul, the interior of the Malakhoff and Redan, the Docks, Barracks, &c. The whole were executed by Robertson of Constantinople.

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* Transactions, p. 1.

Mr. Jacob exhibited at the same time, the helmet and sword of a Russian soldier killed in the attack upon the Redan.

Mr. Marsh exhibited a stone celt or "toki" found among the Maöris of New Zealand.

Mr. Blackmore exhibited a medal, and made some inquiry respecting it, which had been sent by Mr. Lingard, of Eastham. It* was struck in 1689, on the flight of James II.

Mr. Percy M. Dove exhibited two MS. volumes of autograph letters, and copies of others, from distinguished persons, written during the last 70 or 80 years. Among them were several original letters from Dr. Franklin, Bloomfield, Rogers, Miss Edgeworth, &c.

In connexion with this subject, Mr. Bloxam exhibited a copy of "Cicero de Senectute," printed and published at Philadelphia, in 1754, by Benjamin Franklin.

The following Paper was then read:—

ON SOME UNPUBLISHED LETTERS OF DR. FRANKLIN. *By Percy M. Dove, F.S.S., F.I.B.A.*

Mr. Dove laid before the Society two large volumes of Autograph Letters and Scraps, which had been the property of the late Benjamin Vaughan, Esq. They contained several original letters from Dr. Franklin, all of them illustrating the published biography of that eminent man, and confirming the high opinion which the public have already formed of him. They did not of themselves, however, contain matter of sufficient general interest, to require their publication.

The dates of the principal letters were October 4th, 1774; December 16th, 1774; May 5th, 1779; August 18th, 1788; and December 9th, 1788.

In connection with this subject, Mr. Dove furnished some information respecting the Vaughan family, with whom this literary correspondence had taken place. Benjamin, eminent as a scholar and philanthropist, was specially the friend of Franklin; and Priestley dedicated to him the first edition of his "Lectures on History." Some letters of his in the life of Bentham, gave rise to an inquiry respecting him from Miss Edgeworth, contained in the present collection. He was in Parliament for some time; and in the negociations for peace between Great Britain and the United States, he was trusted by both parties. He afterwards settled in America; and we are indebted to him for the admirable Autobiography of Franklin. This is acknowledged in the Life† itself; and is confirmed by the last of these letters of 9th December, 1788. Mr. Vaughan's publication of Franklin's "Political, Miscellaneous, and Philosophical Essays," in 1779, gave rise to a singular charge against Dr. Franklin, respecting the Parable on Persecution.‡ William Vaughan was a merchant in London, and the founder of the "London Provident Institution." He had turned his attention greatly to the subject of canals and docks, and is said to have written articles on those subjects for Rees's Encyclopædia. He was intimately connected with literature and science during the greater part of his life. He settled finally in Philadelphia, where he died. Another brother, the Hon. Samuel Vaughan, was Assistant Judge and Member of Assembly in Jamaica. All the members of the family were long lived, in accordance with the theory that the vitality is expended in some families from generation to generation at an early age, say 50 to 60, while in others the members are equally hale at from 80 to 90.

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* *Obverse.* The head of James with the inscription "Jacobus II. Britan. Rex. Fugitiv. *Reverse* An oak tree prostrated by the storm, and beside it an orange tree in full bearing. Around "Pro glandibus aurea poma," and below "Post fugam regis delata regni administratio Principi aureazian. 1689. S.N." See Pictorial History of England, vol. iv. p. 29, where the inscription is incorrectly given.

† "I am diligently employed in writing the History of my Life, to the doing of which the persuasions contained in your letter of January 31st, 1783, have not a little contributed."—*Franklin to Vaughan, October 24th*, 1788.

‡ This "is one of the most curious topics in literary history. It has often been made the foundation of a charge of plagiarism against Dr. Franklin, but as I think, without foundation. In its modern form, it was published by Lord Kaimes in 1774. He says 'it was communicated to me by Dr. Franklin, of Philadelphia,' but he does not say that Dr. Franklin claimed the authorship of it. It was, not long after, inserted in a small collection of Dr. Franklin's miscellaneous writings, published by Mr. B. Vaughan, (a gentleman recollected by Lord Lansdowne), in London. Mr. Vaughan took it from Lord Kaimes's work."—*Life of the Rev. Sydney Smith.*

17th January, 1856. SCIENTIFIC SECTION.

THE REV. DR. THOM, V.P., in the Chair.

The following Donations were laid upon the table:—

From the Geological Society (London). The Quarterly Journal of the Geological Society, vol. xi, 1855.

From the Geological Society (Dublin). Journal of the Society; vol. i, parts 2, 3, and 4 (1834–38); vol. iii (1844–48); vol. iv (1849-51); vol. v, (1851–53); vol. vi, parts 1 and 2 (1854–55).

From the Society. Proceedings of the Royal Society, vol. vii., No. 16.

From the Society. Proceedings of the Essex Archæological Society, vol. i. part 1.

From Mr. Heath. Explication des ouvrages de Peinture, Sculpture, &c., &c., des Artistes vivants, Estrangers et Français, au Palais des Beaux Arts. Paris, 1855.

An Essay on the Credibility of the Existence of the Kraken, Sea-serpent, and other Sea Monsters. By Edward Heath, Esq.

Dr. Hume laid on the table two objects relating to the Bridgewater family. (1) A medal, now rare, commemorative of Francis Henry, the last Earl of Bridgewater, whose name is associated with the Bridgewater Treatises. (2) A halfpenny of the date 1793, the obverse bearing the arms of the Duke of Bridgewater, and the motto—"Success to Navigation," alluding to the Bridgewater Canal; the reverse—the figure of a man carrying a burden, with the legend "Manchester Halfpenny."

Dr. Hume also directed attention to two interesting fragments of stone; the first a piece of sandstone, about three inches long, from near Delhi, which was perceptibly elastic to the touch; and the second, a sort of soapstone from North Wales, which the women of the locality are in the habit of eating in considerable quantities.

The second portion of the following paper was then read:—

ON THE STATE OF THE WESTERN PORTION OF THE ANCIENT KINGDOM OF NORTHUMBERLAND DOWN TO THE PERIOD OF THE NORMAN CONQUEST. *By John Hodgson Hinde, Esq.*

7th February, 1856. ARCHÆOLOGICAL SECTION.

THE REV. DR. THOM, V.P., in the Chair.

The following Donations were laid upon the table:—

From la Societe Archæologique de l'Orleanais. Memoires, tome iii. 1855.

Bulletin de la Société, Nos. 1-15, (1851-53); Nos. 16-21, (1854-55.)

From J. F. Marsh, Esq. Two plates for the illustration of his own paper.

It was also announced that a donation of four antique high-backed oak chairs, and a small oak table, had been made to the Society, for its Library, by Mr. T. J. Paris.

Mr. Danson exhibited a tobacco-box of tortoise shell, handsomely mounted with silver, and bearing the crest and initials of its original owner; as a specimen of the description of box commonly carried by gentlemen about the middle of the last century.

Mr. Grazebrook drew attention to the prospectus of a Roll of Cloyne of the 13th and 14th centuries, about to be published in fac-simile with illustrations.

Mr. Jacob laid upon the table the following, procured by our army in the East. A book of prayers in Greek, for the use of the modern Greek Church, during the month of April; Venice, 1818. A similar book for the month of September; no date. History and description of the City of Jerusalem and of the Holy Places, folio; Venice, 1728. A Russian square medallion, used as a religious charm, and worn on the person, subject the Virgin and Child.

Mr. G. R. Berry placed before the Society a volume of antiquarian gleanings in the north of England.

Dr. Thom drew attention to the subjects noticed in the following three volumes. A large declaration concerning the late tumults in Scotland, from their first originall; by the King. London, 1639. Recueil des Antiquités, Egyptiennes, Etrusques, Grecques et Romaines; Paris, 1752. A volume containing nine pamphlets, six of them of great local interest in Liverpool.

Mr. Marsh, in illustration of his paper for the evening, exhibited two drawings, viz., a view of the Grammar School, a shield of arms, &c; and a view of the master's house.

Mr. H. A. Bright exhibited an ancient and curious Sclavonic Prayer Book, taken at Kertch.

Mr. Bright exhibited a small green stone or perforated bead, with a white spiral snake curling round it. "The Welsh call these stones 'Glain Neidr,' or snake stones. They were worn by the different orders of bards, each having its appropriate colour; the blue belonging to the presiding bards, the white to the Druids, and the green to the Ovates. Those with the three colours blended were devoted to the use of the disciples. The notion of their rare virtues was universal in all places where the bardic religion was taught."

Mr. Bright drew attention to an autograph of the Empress Maria Theresa, written shortly before her death.

Dr. Hume placed before the meeting on the part of the Misses Cort, of Kirkby-in-Walton, four beautiful ivory carvings. The subjects were described as St. Dominic; the scourging of Christ; Hercules and Omphale; and St. Sebastian.

The following Paper was then read:—

On the Foundation and History of Botelер's Free Grammar School, at Warrington. *By John F. Marsh, Esq.**

14th February, 1856. LITERARY SECTION.

J. T. Danson, Esq., V. P., in the Chair.

The following Donations were laid upon the table:—

From the Smithsonian Institution of the United States. Antiquities of Wisconsin, as surveyed and described by J. A. Lapham, C.E., for the American Antiquarian Society; 4to, Washington, 1855.

Eighth Annual Report of the Boards of Regents of the Smithsonian Institution; 8vo, 1855.

Ninth Annual Report of Ditto, 1855.

Appendix; Publications of Learned Societies and Periodicals in the Library of the Smithsonian Institution; part 1, to January 1st, 1855.

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* Transactions, p. 51.

From the Editor. A Few Answers to the Arguments put forward by the Speakers at the Great Meeting in St. George's Hall, January 20, 1856, in Defence of the Sabbath: extracted from the Liverpool Press. Liverpool and London. 8vo. 2 copies.

From Mr. Genn, presented through Mr. Burke. The Humourist; a Comedy, by Thomas Shadwell: London, 1671. Dedicated to the Duchess of Newcastle, and bearing the autograph of Henry Duke of Newcastle, 1676.

Dr. Hume drew the attention of the Society to some beautiful maps, which are in course of publication. They are accompanied by pictorial and ethnological illustrations; and the political dependencies are beautifully grouped, when possible, round their respective centres.

The following paper was then read, viz:—

"On the Area and Population of the Manchester District." *By J. T. Danson, Esq., V. P.**

21*st February*, 1856. SCIENTIFIC SECTION.

The Rev. Dr. Thom, V. P., in the Chair.

The following Donations were laid upon the table:—

From the Society. Transactions of the Ashmolean Society, vol. i (wanting parts 1 and 8, which are out of print); vol. ii.

From the British Association for the Advancement of Science. Twenty-fourth Annual Report—Liverpool Meeting. 1855.

From Mr. Thomas Gray. Statistics of South Australia, for 1854, compiled from authentic official records in the Colonial Secretary's office, Adelaide.

Mr. Sansom mentioned that the arrangement of the Society's Herbarium was progressing, and submitted for exhibition a series of the rarer plants possessed by the Society.

Mr. C. S. Gregson exhibited four cases of British Lepidoptera, in illustration of his paper for the evening.

Mr. Moore, of the Derby Museum, laid before the Society three pairs of horns, of the Chiru, (Antilope (Pantholops,) Hodgsonii, Abel,) the so-called "Unicorn" of Thibet; also a pair of horns of the Prong Horn Antelope, of North America; and another pair, presenting some remarkable points of difference. These were described shortly before, by Dr. Gray, of the British Museum, as those of the Antelocapra Anteflexa, from this specimen, the only one yet obtained.

Mr. Moore read the following remarks, explanatory of these specimens:

On a supposed new species of Prong-horned Antelope from North America. *By Mr. Thomas J. Moore, of the Derby Museum.*

The series of Mammalia in the Derby Museum, contains the head and horns of the remarkable Cabrit or Prong-horn Antelope of North America, and also a pair of horns similar in general characrer, but bent in an exactly opposite direction. I placed them in the hands of Dr. Gray of the British Museum; and after due consideration, they

* Transactions, p. 165.

were described by him before the Zoological Society of London, as a probable new species, under the name of *Antilocapra anteflexa*. As Dr. Gray's description is attached to the specimen now exhibited, it is unnecessary to repeat it here. I am in possession of no other information respecting it except a fact which I learned after placing the horns in Dr. Gray's hands, and that is, that both pairs of horns were obtained by Mr. Burke in North-West America, but in what exact locality was not stated. The common species ranges from 53° North to the plains of Mexico and California, and is found in considerable numbers on the banks of the Colombia and Saskatchewan rivers.

ON THE HORNS OF THE CHIRU, (*Antilope* (*Pantholops*) *Hodgsonii*, Abel), THE SO-CALLED UNICORN OF THIBET. *By Mr. Thomas J. Moore.*

The reader of Huc's Travels in Tartary and Thibet is not a little astonished at the author's assertion, towards the close of his narrative, in recounting his return from Lha-Ssa, the capital of Thibet, of the veritable existence of the Unicorn. He says, "On the fourth day of our departure from Ghiamda, after having crossed a great lake on the ice, we stopped at the Station Atdza, a small village, the inhabitants of which cultivate a few acres of land, in a little valley encircled by mountains, the tops of which are covered with hollies and pines. The Chinese itinerary says, on the subject of the lake you see before your arrival at Atdza, 'The unicorn, a very curious animal, is found in the vicinity of this lake.'" M. Huc then goes on to say, "The unicorn, which has long been regarded as a fabulous creature, really exists in Thibet. You find it frequently represented in the sculptures and paintings of the Buddhic temples. Even in China you often see it in the landscapes that ornament the inns of the northern provinces. The inhabitants of Atdza spoke of it without attaching to it any greater importance than to the other species of Antelopes which abound in their mountains. We have not been fortunate enough to see the unicorn during our travels in Upper Asia. But all we were there told about it, serves to confirm the curious details which M. Klaproth has published on this subject in the new '*Journal Asiatique*,' and who states 'The unicorn of Thibet is called in the language of this country, *Serou*.'" After some further desultory remarks, M. Huc goes on to say "Mr. Hodgson, an English resident in Nepaul, has at length achieved the possession of a unicorn, and has put beyond doubt the question relative to the existence of this species of antelope, called '*tchirou*,' in Southern Thibet, which borders on Nepaul. It is the same word with *serou*, only pronounced differently, according to the varying dialects of the North and of the South." Dr. Abel has proposed to give to the tchirou the systematic name of *Antilope Hodgsonii*, after the name of the learned person who has placed its existence beyond a doubt.* Unfortunately M. Huc does not inform his readers that the antelope in question is possessed of a pair of horns like other antelopes, and that the so-called unicorns are at the most only such as have broken one off at the root by fighting!

Dr. William Hooker, in his "Himalayan Journals," vol. ii, pp. 157–8, gives a sketch of the head and horns in profile, and also a front view of the Chiru, and states that "The accompanying figures of the heads of the Chiru (*Antilope Hodgsonii*) were sketched by Lieut. Maxwell (of the Bengal Artillery) from a pair brought to Dorjiling; it is the so-called unicorn of Thibet, and of MM. Huc and Gabet's narrative,"—a name which the Doctor thinks the profile no doubt suggested. Dr. Hooker saw them feeding on the short grass about the Cholamoo Lakes, which are 17,000 feet above the sea, in company with another antelope (the *Procapra picticauda*), Hares, (*Lepus oiostolus*), Marmots, and tail-less Hares (*Lagomys*).

The only specimens of this animal which have reached England, are a male in the British Museum, a specimen in the East India Company's Museum, and a male and female formerly in that of the Zoological Society. These, and a few horns in the same museums, are the only remains of this rare species that have been imported, and have been chiefly obtained by B. H. Hodgson, Esq., the late British Resident at the Court of Nepaul, (mentioned above), to whose zeal is due most of the information obtained on the subject, and to whom zoologists are almost entirely indebted for their knowledge of the natural history of that country, and the discovery of some hundreds of new species of quadrupeds and birds.

* From the Illustrated Edition of Huc's Travels in Tartary, &c., translated by Wm. Hazlitt, forming part of the National Illustrated Library, London, 185-. Vol. 2, pp. 244-248.

Such being the rarity of the Chiru, it is with great pleasure that I am enabled to exhibit to the meeting three pairs of horns, two of which were purchased, and one pair, with the chief part of the cranium attached, presented by the East India Company in their recent magnificent donation to the Free Public Museum. This pair was forwarded to the Company by Mr. Hodgson himself; and the following extracts are from various Papers forwarded by him from time to time to the Zoological Society as he became acquainted with the characters and habits of the species, and printed in the Society's Proceedings.

This animal, the supposed unicorn of the Bhotians, was first described imperfectly by Dr. Abel (in the Edinburgh Journal of Science for 1827) from an injured skin, and the notes of Mr. Hodgson. Dr. Abel gave it the name of Antilope Hodgsonii; and it has subsequently been mentioned by M. Lesson as the *Antilope Chiru*, and by Major Hamilton Smith as the *Antilope Kemas*.

"In form the Chiru antelope approaches the deer. Its limbs are long and slender, but not weak; its neck is also rather elongated and slender; its head tapers forwards, but is somewhat deficient in elegance on account of the nasal tufts, and of a rather unusual quantity of hair and bristles about the mouth and nose. The ears and tail are moderate, and devoid of any peculiarity; so likewise are the suborbital sinuses. The horns are exceedingly long, measuring in some individuals nearly two feet and a half. They are placed very forward on the head, and may be popularly said to be erect and straight, although properly speaking they bend forwards and outwards, and become suddenly incurved towards their tips. These latter are rather acute, and the horns near them become round; below they are laterally compressed, and are marked by a series of from fifteen to twenty rings, extending from the base to within six inches of the tip. On the lateral and dorsal surfaces of the horn these rings are little elevated, and present a wavy rather than a ridged appearance; but on the frontal surface, they exhibit a succession of heavy, large ridges, with furrows between.

"Close to the outer margin of either nostril is a soft, fleshy, or rather skinny tumour or tuft, about the size and shape of the half of a domestic fowl's egg. These tufts appear to be peculiar to the *Chiru*.

"In its double covering, the *Chiru* agrees with all the hairy animals of Thibet, where not merely the goats and sheep, but the dogs, horses, and kine, possess an under fleece of soft fine wool. The hair forming the external coat is about two inches long, and so closely set as to present to the touch an impression of solidity; it is straight, nearly erect, rather harsh, and feeble, being for the most part hollow like a quill. Grey blue is the general colour of the hair throughout nine-tenths of its extent from root to tip, as well as exclusively so of the wool beneath the hair. This radical and prevalent color is, however, but dimly seen through the external or superficial hues with which it is overlaid; hues which on the upper parts of the animal are fawn red, and on its under surface and the inside of its limbs are white. The shoulders are faintly marked by a tracing of color lighter than that of the surrounding parts. Down the front of all the legs runs a black line, reaching to the hoofs on the fore-legs, but to the knees only on the hind legs. The forehead is perfectly black, and a fringe of the same hue proceeding from the bottom of the frontal skin passes round the outsides of the nasal tufts. These tufts, as well as the rim surrounding them, are black; as are also the bristles of the mouth and lips; the few hairs, however, which depend from the lower lip are white.

"Entire length of a fully grown young male 4 feet 2½ inches—height at shoulder 2 feet 8 inches.

"The Chiru is highly gregarious, being usually found in herds of several scores and even hundreds. It is extremely wild, and unapproachable by man, to avoid whom it relies chiefly on its wariness and speed; but though shy it is not timid, for if overtaken it meets danger with a gallant bearing. An individual which was kept alive at the Presidency, though captured very young, was perfectly fearless, and could only be approached with caution. It is said by some to inhabit the plains of Thibet generally; while according to others it is confined to those plains which are within sight of mountains, especially of the Hemâchal mountains. It cannot bear even the moderate heats of the valley of Nepal, an individual belonging to the Lama of Digurchee having

died at the commencement of the hot season, when the maximum of temperature was only 80°, a temperature seldom reached for two hours a day, or for two days of that month, March.

"The Chiru is extremely addicted to the use of salt in the summer months, when vast herds are often seen at some of the rock-salt beds which so much abound in Thibet. They are said to advance under the conduct of a leader, and to post sentinels around the beds before they attempt to feed."—*Hodgson in Proc. Zool. Soc. Lond.* 1831, p. 52.

The nasal tumours which form so remarkable a peculiarity of the species, are stated by Mr. Hodgson, in a subsequent paper, "to consist of fine elastic skin and cartilage, similarly to the nostrils, immediately behind the posterior boundary of which they are situated, and into which they open freely, being, in fact, a prolongation backwards, and accessory dilatation of that reflection of the skin which lines the nostrils. Externally they present a round, firm, elastic swelling on each lip, well defined, and covered with hair like the adjoining parts; internally they constitute a sac, of capacity to contain a marble, lined with the same skin that lines the nostrils, and not communicating with the interior of the nose except by and through the ordinary nostrils, into which the sacs open forwards by a slit that will admit the finger to be passed into it; and thence all over the interior of the sac. These sacs are usually defiled with *mucus*, secreted from the nose; and they seem to be nothing more than supplementary nostrils, designed to assist this exceedingly fleet animal in breathing when he is exerting all his speed, for the expansion of the nostrils opens them also, and their elasticity allows of their being dilated in the manner of the nostrils. There is no appearance, either external or on the bones of the face, of the lachrymal sinuses." *Id.* 1833. p. 110.

"The female is hornless, and has two teats only; she has no marks on the face or limbs, and is rather smaller than the male. The male has a large pouch at each groin, as in the Dorcas Gazelle; that of the female is considerably smaller." In conclusion, Mr. Hodgson's opinion as to the position of the species in the system is, that "The Chiru with his bluff bristly nose, his intermaxillary pouches, and hollow-cored horns," (the bony core of the horns having a large oval cavity, communicating by one clean canal with the frontal sinuses) "stands in some respects alone," and hence Mr. Hodgson is disposed to suggest, that it should be regarded as representing "a new subgenus, to be termed *Pantholops*, the vulgar old name of the Unicorn.—The habits and manners of the *Chiru*, his medial size, and his elegant vigorous form, ally him most to the *Antilopine* and *Gazelline* groups, and equally to both." (*Id.* 1834, pp. 80-81.) This opinion is shared by Dr. Gray, who, in his last published arrangement of the Ruminantia, (List of Ungulata Furcipeda in British Museum, 1852,) places the Chiru in the same subdivision as the Gazelles; under the amended title of *Pantholops Hodgsonii*.

Colonel Hamilton Smith remarks, "The species might still have remained unnoticed in the elevated wildernesses of Central Asia, if the people of the country had not asserted it to be the Unicorn, and since the specimen is produced, insisted that it is often found with only one horn. No doubt all the" Antelopes of this group "are liable to break one of their horns, when we consider their length, small diameter, and the vigour and courageous disposition of the animals." *Griffith's Cuvier*, 4, p. 198.

The following papers were then read:

On the Lepidopterous Insects of the District Around Liverpool. *By Charles Stuart Greyson, Esq.**

On the Advantages of the Study of Natural History, in our National or People's Schools. *By Charles Stuart Gregson.*

The introduction of Natural History more fully and formally into our National Schools, was strongly advocated; though the writer gladly admitted that the principle

* Transactions, p. 153; continued from Transactions vii, p. 254.

had been already recognised in part; and he noticed several school treatises on the subject. His opinion was that ordinary schoolmasters and pupil teachers might easily be instructed in the principal branches of Natural History, so far as to initiate their pupils, and to enable them to prosecute individual departments with success, when taste and opportunity existed. Besides securing the young against the formation of vicious habits, such studies would add materially to their enjoyments, and might lead to still higher results in pointing them "from Nature up to Nature's God." But in a utilitarian age, it was of great importance to be able to shew that an acquaintance with natural products, animal vegetable and mineral, was useful to the man of business; and this the writer did by reviewing the daily occurrences in some of the ordinary occupations of life.

6th March, 1856. ARCHÆOLOGICAL SECTION.

THE REV. DR. THOM, V.P., in the Chair.

Mr. Robert Daw, F.B.S.E., Comptroller of the Customs at Liverpool, and Mr. Charles Hardwick, of Preston, were duly elected Members of the Society.

The following Donations were laid upon the table:—

From Gilbert J. French, Esq. Bibliotheca Albinsoniana, a Book Catalogue.

From the Society. Quarterly Journal of the Geological Society, volume XII, part 1.

From the Author. Sigilla Ecclesiæ Hibernicae Illustrata, by Richard Caulfield, B.A., parts 1 and 2.

From the Author. The Provident Institutions of the Working Classes; and Provident Institutions of the Working Classes, their Precarious Financial Condition; two tracts, by Charles Hardwick, Esq.

From the Editors. Two copies of a Paper entitled "Sabbath Defence," containing the Report of a Public Meeting in defence of the Sabbath, held at St. George's Hall, 22nd January, 1856.

From Thomas Moore, Sen., Esq. Report on the present state of the Navigation of the River Mersey, by George Evans, Capt. R N., Acting Conservator, 1856.

From William Kelly, Esq., Leicester. Three Wood Engravings, representing respectively—Fragment of a Roman Pavement, Roman Milestone imperfect, and Roman Milestone restored.

From Dr. Kendrick. Various cuttings and slips, being cuttings of local Notes and Queries from the *Warrington Guardian*.

From Dr. Thom. Printed Report of a Meeting of the Leicestershire Architectural and Archæological Society, September 18th, 1855.

From Mr. Dunkin, of Dartford. The Archæological Mine and New History of Kent, parts i–xx, also parts xxi, xxii, and Supplement.

From Mr. H. Ecroyd Smith. Roman Tesselated Pavements, Nos. 1, 2 [illegible] from the grounds of Andrew Lawson, Esq., of Aldborough, Yorkshire [illegible]

Tesselated Pavement discovered in Jury Wall Street, Leicester [illegible] and another from the same town, discovered in High Cross Street, [illegible]

Mr. Blackmore exhibited and explained four stone celts and two bronze spear [illegible] Of the former, two were found near Galway, one at Backton, in Cumberland, and [illegible] in New Zealand. Of the latter, the more perfect specimen was discovered in 18[illegible] a bog at Leenane, Connemara, about six feet from the surface.

Mr. Blackmore also drew attention to the formation of Irish pearls, and showed two from beside Oughterarde, with the mussel shells in which they were found. He also laid before the meeting two coins, one of Nero, found in cutting the canal from Lough Corrib to Galway Bay; and two echini of unusual size and thickness, from the oyster beds on the coast of the County Clare.

Dr. Kendrick exhibited to the members an autograph letter of Linnæus, which had been addressed to Mrs. Anne Blackburne, of Orford, Warrington. It was dated Upsal, 24th July, 1771. A printed translation of it was read.

Mr. Boult made some inquiries respecting localities on the estuary of the Mersey, and showed the manner in which they were laid down in a Chart which he exhibited. Its title is "A Description of the Sea Coast of England and Wales, from Black-comb in Cumberland, to the Point of Linus in Anglesea, shewing the true situation of all the Headlands, Bays. Roads, Harbours, Rivers, Creeks, Islands, Sands, Shoals, Depths of Water, Settings and Flowings of the Tides, Places where the Buoys, Beacons, &c. are fixed, with proper directions to avoid all dangers, and sail into any Harbour, Bay, Road, &c. on the said coast. Also many prospects of the same, correctly engraven on Copper Plates, in the charts belonging to this work; with remarks on, and references to them in a new and useful manner. According to an actual survey thereof made in the years 1736 and 1737, By Samuel Fearon and John Eyes, Liverpool: Printed by Adam Sadler, for the Authors, 1738."

[On the Chart of Liverpool Bay is a memorandum as follows:—"This new survey was taken and published in December 1755 as the act directs by John Eyes:" and "The plates altered by Jeremiah Evans Liverpool."]

Mr. Stonehouse exhibited water-colour drawings of various points in the neighbourhood, dated 1821; also a coloured engraving representing Liverpool from the Rock Perch in 1797. It was stated that several drawings are in circulation, copied from Herdman and others, but incorrectly represented to be original.

Mr. Lidderdale exhibited some works of the 17th century on Astrology and Palmistry.

Mr. Grazebrook showed a curious padlock made from a cannon ball, supposed to have belonged to the Spanish Armada.

Mr. Boardman exhibited, in illustration of his Paper to be read, a steel tobacco-box of the middle of last century; a set of Prince-of-Wales buttons, manufactured and worn in 1762; an early umbrella, of about 1770; and a peculiar walking stick of the same date.

The Secretary announced, that the next Meeting of the Society would be held in the Grand Jury Room, which would be fitted up specially for the occasion. A Paper by Dr. Julius Oppert, of Paris, would be read; and on that occasion the attendance of ladies was invited.

A letter was read from Sir Philip Grey Egerton, Bart., dated February 18th, 1856, correcting some statements in Mr. Stonehouse's Paper on the Parish and Church of Over, in Cheshire.* The expressions criticised were the following:—

1. *Mr. Stonehouse.*—"Oulton park and demesne were their [the Starkies'] property."

Sir P. Egerton.—"Now Oulton park and demesne are not in the parish of Over, but in the parish of Little Budworth, in which parish, to the best of my belief, the Starkies never possessed a single acre. They belonged to the Dones, who purchased them from the Rechetons, *temp* Edward IV, and came into the possession of my family, by the marriage of Elizabeth, heiress of Hugh Done, with John Egerton, who died 1st Richard III."

2. *Mr. Stonehouse.*—"At Hugh Starkie's death in 1555, the estates [viz., Darley] came into possession of Oliver Starkey, an illegitimate son.....He dying without issue, the estates descended to his brother James."

* Vol. vii. p. 33*.

Sir P. Egerton.—"No authority is given for this statement. As far as I have been able to ascertain, I do not believe that the estates were vested in Oliver, but that on the death of Hugh Starkie without legitimate issue, they passed to his brother James."

3. *Mr. Stonehouse.*—"Either by litigation, or from other causes, the property passed into the hands of the Egertons."

Sir P. Egerton.—"I am aware that this passage, and many others in the paper, are borrowed from Ormerod; but in so gigantic a labour as the compilation of a History of Cheshire, it cannot be otherwise than that inaccuracies must occur, and they are very frequent in all that relates to my family, in consequence, I believe, of the author not having had access to the documents containing the information he required. The ambiguity of expression in the passage quoted, proves that he knew nothing about the matter; and would, I should have imagined, have deterred any other from selecting such a passage for repetition. The facts are, that the Starkie estates came into the possession of the Egertons of Oulton, by regular sales and conveyance, from Henry Starkie to Sir Philip Egerton, Knt., in the reign of Charles II, as shown by deeds and documents in my possession."

Sir Philip forwarded with his remarks a tracing of a scrap of a Starkie pedigree, written apparently in 1695. It brings the family one generation lower than Ormerod's pedigree.

The following Paper was then read:—

TABLE TALK OF THE OLDEN TIME; OR, LIVERPOOL A HUNDRED YEARS AGO. *By James Boardman, Esq.**

13*th March*, 1856. MISCELLANEOUS MEETING.

J. T. DANSON, F.S.S., V.P., in the Chair.

The Chairman, on announcing that the meeting was constituted, expressed on behalf of the Society, the pleasure which the members felt in welcoming ladies to one of their ordinary meetings. Special arrangements had been made for the purpose, and he hoped that the proceedings would be of a character to produce favourable and useful impressions. The order of business would be followed just as usual, so as to give a perfectly correct impression of the Society's mode of proceeding.

The following Donations were laid upon the table:—

From the Society. Memoirs of the Literary and Philosophical Society of Manchester, second series, vols. II, III, IV, V, VII, (in two parts), VIII.

From Lord Londesborough. Miscellanea Graphica, No. 8.

From the Author. Manual of British Botany, by Charles Cardale Babington, M.A., F.R.S., F.G.S., third edition, 1851.

From the Author. An Account of the Presents received, and Expenses incurred, at the Wedding of Richard Polsted, of Albury, Esquire, and Elizabeth More, eldest daughter of William More, of Loseley, Esquire, in 1557, by John Evans, Esq., F.S.A., 1855. From the Archæologia, vol. XXXVI.

From the Author. Duplicate copy of Geology of the Lake District, by John Rooke, Esq., of Akehead, Wigton, Cumberland.

From the Rev. Dr. Thom. Nos. 10 and 14 of the Rambler, a Liverpool periodical.

Mr. Boardman exhibited a lady's work-box, inside of which was an inscription,

* This paper has already been published, and is sold in pamphlet form.

stating that the cover of it was worked by Dorothy Peake, grand-daughter of the Rev. Charles Herle, Prolocutor of the Westminster Assembly of Divines in 1643. He was Rector of Winwick from 1626 to 1662, when he was ejected for nonconformity.

A large number of illustrations of Assyrian and Babylonian objects were lent by the Rev. Dr. Baylee, of Birkenhead, and formed part of an interesting display on one side of the room.

Dr. Hume called attention to a paragraph in *L'Abbevillois*, a French newspaper of 7th March, 1856, in which Mr. Roach Smith's Museum of Antiquities is noticed. The writer mentions that as it is interesting for the history of France, almost as much as for that of England, its purchase by the French Government would be desirable, or by one of the great towns of the Departments.

The following Paper was then read:—

ON BABYLON, AND ON THE DISCOVERY OF THE CUNEIFORM CHARACTERS AND THE MODE OF INTERPRETING THEM. *By Dr. Julius Oppert, of Paris.**

3*rd April*, 1856. ARCHÆOLOGICAL SECTION.

PETER MACINTYRE, M.D., in the Chair.

The following gentlemen were duly elected Members of the Society:—

The Venerable Archdeacon Jones, M.A., Waterloo.
Joseph Hibbert, Esq., Brook Bank, Hyde, Cheshire.

John Pemberton Heywood, Esq., late High Sheriff of Lancashire, having signified his wish to continue in the Society, was enrolled without election or entrance fee, in accordance with Law xiii.

The following donations were laid upon the table:—

From the Society. Memoires de la Société Archæologique de Normandie, vol. x, part 4, (second series,) 4to, Paris, 1855.

Do., vol. i, (third series,) 4to, Paris, 1855.

From the Society. Transactions of the Ossianic Society, vol. i. The Battle of Gabhra, 1854.

From the Society. Bulletin de la Société Archæologique d'Orleanais, No. 22, 1855.

From the Society. Original Papers published under the direction of the Committee of the Norfolk and Norwich Archæological Society, vol. v, part 1, 1856.

From the Cambrian Archæological Association. Archæologia Cambrensis, No. 5, (third series) January, 1856.

From the Author. The History of Leicester, from the time of the Romans to the end of the 17th century. By James Thompson, Leicester, 1849.

From Edward Heath, Esq. Local pamphlets, containing the following:—

Annual Reports of the Liverpool Ragged School Union, 1st, 2nd, 3rd, 4th, 6th, and 8th.
Annual Reports of the Liverpool Industrial Ragged Schools, Soho Street, 1st, 3rd, 4th, 5th, 6th, and 7th.
Report of the Police Establishment, &c., 1854.
Financial Reform Tracts, (new series,) vii, viii, ix, xi, xiii, (1854, '55, '56.)
Liverpool and its Educational wants, by James Gillespie.

* Transactions, p. 93.

Report of the Liverpool Borough Prison, 1852.
Report of the Proceedings at a Special Meeting of the Liverpool Chamber of Commerce, on the Law of Partnership, 1851.
Ritchie's Address on Ragged Schools, to Young Men's Society, 1851.
History of the origin of Ragged Schools, 1848.

From Thos. B. Ryder, Esq. Journal of the Manchester and Liverpool Agricultural Society, 1856.

From the Rev. W. B. Grenside, B.A. Two drawings of the Market House, Town Hall, Stone Stocks, and base of the parish Cross, Hornby, Lancashire, made previous to their removal in 1851.

From Mr. Hermann. Two Lectures, by the Rev. Mr. Hart, on the History and Antiquities of Nantwich.

From Dr. Hume. Proof impression of a Portrait of Mr. Mayer, Honorary Curator, engraved by LeKeux, from a photograph.

From Charles Hardwick, Esq. Observations on the rate of Mortality and Sickness existing among Friendly Societies; by Henry Ratcliff, 1850. Appendix to do., 1852.

From Alfred J. Dunkin, Esq. Archæological Mine and History of Kent, Parts xxv, xxvi, xxvii.

From Dr. Kendrick. Two slips of Notes and Queries, from the *Warrington Guardian*.

From Alderman Brown, Preston. Portion of the upper stone of a Quern, obtained among the Roman Remains at Walton-le-Dale, Preston. Two fragments of Samian Ware, and neck of an amphora, from do.

From Charles Hardwick, Esq. Roman Remains, from Walton-le-Dale, consisting of the following:—

Portion of the neck, handle, and sides of a large Roman amphora.
Portion of a flat tile, with flange.
Four balls of prepared clay, as used at the potteries.
Nine pieces of red Samian ware.
Seven pieces of dark ornamented pottery.
Three do. of white do., one of them the bottom of a mortarium, with quarts inserted to aid the friction.
Neck and three fragments of an ordinary red vessel.
Two molar teeth, and part of the jaw of a horse, found in connexion with the remains.
Two large iron nails, portion of a pewter vessel, and a piece of sheet lead.

In illustration of his paper, to be read, Mr. Hardwick exhibited a large number of objects, including the following:—Enlarged map of the locality, including the township of Fishwick, and part of the parish of Walton; three drawings from the more interesting figures exhibited on the Samian ware; drawing of Roman pottery of various kinds; drawings of numerous objects of interest in stone and metal; portions of a Roman quern; fragments of Roman pottery; Roman coins, various; part of a fibula, with ornaments in blue enamel; portion of a fine fibula, with red stone setting; &c., &c., as described in the paper.

The Rev. W. B. Grenside, B.A., exhibited a beautiful sword, dug up in Sherwood Forest, about 75 years ago, and formerly the property of Major Hayman Rooke. The hilt presented a specimen of elegant ivory carving.

Mr. Grenside also exhibited a portion of a silver fibula, with curious inscriptions on both sides. It was dug up at the Roman Station of Bremetonacæ, about three miles from Kirkby Lonsdale.

The Secretary announced that the Honorary Curator, Mr. Mayer, had offered to

his valuable collection, illustrative of Archæology, Ethnology, and the Fine Arts, in the keeping of the Town Council, during pleasure; provided the Library and Museum Committee could find suitable accommodation for it.

The following Papers were then read:—

ON THE ROMAN REMAINS RECENTLY DISCOVERED AT WALTON-LE-DALE, NEAR PRESTON. *By Charles Hardwick, Esq.* *

MONUMENTAL BRASSES FOUND AT PRESTON. *By William Dobson, Esq.*

A few months ago, as a brass-founder (Mr. W. Holland) in Preston was turning over a heap of old brass, with a view of transferring it to the melting pot, one piece having an antiquated look, and bearing upon it some marks, attracted his attention. He rescued it from its impending fate, and laid it aside. I obtained it from him, and after a little cleaning, easily deciphered the following inscription in plain Roman capitals, of which a rubbing is submitted:—

HERE · LYETH · INTERD · SEATH · BVSHELL · WOOLLEN · DRAPER BAYLIFE · AND · A · BROTHER · OF · PRESTON · DYING . THE · XV · OF SEPR · 1623 · AGED · 53 · GAVE · VNTO · HIS · KINESFOOLKES · AND · GOD CHILDREN · IN · LEGACIES · VI · C · L† · ALSO · XX · L‡ . TO · THE · POORE OF · THIS · TOWNE · FOR · EVER · THE · VSE‖ · TO · BE · GIVEN · THE . SAID POORE · BY · THE · MAIOR · OR · HIS · DEPVTIE · AT · CHRISTs · & · EASTER 4 · L · TO · THE · POORE · OF · LEELAND · & · WALTON · AL · OVT · OF · HIS CHARITABLE · MINDE

The "Seath Bushell" whose benevolence is thus recorded, was buried within the Parish Church of Preston, and his interment is recorded in the parish register, next to one dated the 16th of September, 1623, as follows:—Sep. [sepultus, buried] Mr. Seth Bushell, eo: die [the same day.] He was, as stated in the inscription, a "brother of Preston," i.e., a member of the corporation, his signature as "Seathe Bushell" being affixed to some proceedings of that body in the corporation records, in the year 1612. After possessing myself of this plate, which Mr. Holland kindly placed in my hands, with a view to its restoration to the church, I made some enquiries as to the site of Mr. Bushell's grave, and felt anxious to obtain some particulars of one who had shewn such a desire to benefit not only his "kinesfoolkes," but the poor of his town and neighbourhood. I learned that when the works in connection with the rebuilding of our Parish Church were in progress (in 1854 and 1855), the workmen were told that if they met with any plates (meaning, no doubt, ordinary coffin plates) they were to bury them. Yet even an ancient coffin plate might have possessed some local, personal, or historical interest. It would have been wiser to have ordered that all should have been submitted to some one in authority, who might have examined them. The workman who met with this plate, which was affixed to a gravestone about two feet below the then level of the church floor, knew that if a brass plate was of so little importance to a churchwarden, it would at least be worth something to a marine store dealer; so he got it removed and sold for old brass. In the progress of the work another workman met with a second brass upon the same gravestone, and this being disclosed in the presence of the parish sexton, some trouble was taken to obtain the former plate also, but of course without success. An inscription, "Spes altera vitæ" [*sic*], cut in rude old English characters, was above the plates on the gravestone. When I made enquiries (in December last) a few months after the discovery, not a vestige of the stone could be found. It had been destroyed in the course of the work, but fortunately Mr. John Addison, of this town, who saw it soon after its discovery, had taken a rubbing of it, from which this copy has been made.

The two brasses are of equal size, nineteen inches by nine; the one discovered last was placed lengthwise on the stone, with the other one crosswise below it. The former

* Transactions, p. 127.
† £600. ‡ £20. ‖ Interest.

bears a rude representation of a person wearing a robe, probably a municipal robe of that era; for our councillors then wore gowns, and rules respecting their attire are in our corporation records. There is also the broad turned down collar seen in portraits of that date. Mr. Bushell, for I deem it to be intended for his effigies, has the close cut hair of the Roundhead of that age, as well as the moustache and "beard of formal cut" clearly defined.

Of his family connections I can give no authentic information. From the extent of his bequests to his "kinesfoolkes and god-children" I presume he was childless. A Seth Bushell, probably his nephew, was vicar of Preston. His signature as "Seth Bushell, D.D., and Vicar of Preston," appears several times in the minute book of the Select Vestry of the Parish, between 1671 and 1674. He was afterwards (1682-84) Vicar of Lancaster. It is not improbable that Dr. William Bushell, the benevolent founder of Goosnargh Hospital, near Preston, was of the same family. As respects the benefactions to the poor, recorded in the inscription, I can give no information. The Reports of the Charity Commissioners say nothing about any of them, and the records of our corporation are silent as to any legacy to this town, although they contain notices of other charities. Like many others they have, in the lapse of ages, been lost sight of, or diverted from their original destination.

Notwithstanding the rudeness of these brasses, as works of art, the scarcity of such monumental records in the northern and western counties, and the benevolent intentions of the Lancashire worthy whom they were intended to commemorate, entitle them, I think, to a notice in the Transactions of the Lancashire and Cheshire Historic Society.

10th April, 1856. LITERARY SECTION.

THOMAS SANSOM, Esq., in the Chair.

The following Donations were laid upon the table.

From the Royal Irish Academy. Transactions of the Academy, vol. xxii, part 1, Science; part 2, Literature. Proceedings, vol. vi, part 2 (1854–55.)

From Edward Clibborn, Esq. An Essay on the Probability of Saul, Benjah, Abishai, Jehoshaphat, Jonathan, &c., having been the Hycsos Rulers, called Salatis, Beon, Apachnas, Apophis, &c., accompanied by a biographical and historical table.

From the Society. Transactions of the Philological Society; Nos. 12, 13, and 14, for 1854.

From the Cambrian Archæological Association. Archæologia Cambrensis, No. 6, (third series) April, 1856.

From G. Mansfield Browne, Esq. Twelve coins of the Greek and Roman periods.

From Dr. Macintyre. View of the top of Bold Street, now undergoing alterations, and of St. Luke's Church.

Miss Lamb, of Everton Road, forwarded for exhibition two small Indian figures carved out of soapstone. They had been forwarded by her late brother, Mr. Andrew Lamb. One represents the Hindoo Mars, seated on the back of a peacock; and the other his brother, a corpulent man, with four hands and an elephant's head. Miss Lamb also exhibited a silk purse, used as an envelope by persons of distinction in India. It is sewed inside, and the cord which fastens it at the mouth is enveloped in the seal.

The following paper was then read:—

ON THE CHARACTER OF HAMLET. *By the Rev. Arthur Ramsay, M.A.**

* Transactions, p. 115.

17*th April*, 1856. SCIENTIFIC SECTION.

J. T. DANSON, Esq., V.P., in the Chair.

The following Donations were laid upon the table:—

From the Society. Journal of the Geological Society, vols. v, vi, vii, viii, ix and x.

From the Society. Transactions of the Philological Society, Nos. 12 and 13 for 1855.

From the Society. Journal of the Statistical Society, vol. viii, part 4, December, 1855.

From the Editor. The Poetical Works of William Drummond, of Hawthornden, edited by W. B. D. D. Turnbull, Esq.; London, 1856.

From John Hartnup, Esq. Report of the Liverpool Observatory, for the year 1855.

From Mr. J. R. Isaac. A wooden platter, with a crowned figure in the centre, supported by two dolphins, and round the border birds and fruit.

A portion of two guns, fixed together, taken by Mr. Isaac from the fire at the Tower of London.

Thomas Wyndham Jones, Esq., of Nantwich, exhibited the following articles:—

The knife and fork of Mrs. Elizabeth Milton, mentioned in the inventory (vol. vii, p. 30*) as "a toter shell knife and fork, with sundry others." They are deposited in an oak case, made from the beam of a cottage in Nantwich, which was the inheritance of Humphrey Milton the elder and Humphrey Milton the younger, and adjoined a Baptist Chapel, in the yard of which Mrs. Milton was interred.

Skull of the Indian wild hog.

Helmet found in a field near Acton Church, Nantwich, the scene of a battle, *temp.* Charles I.

Portion of a chain-shot, found several feet below the surface in Nantwich, during an excavation for sewerage purposes.

A horse shoe, found at the same time and place.

An ancient steel box, which had belonged to a family in Cheshire.

An Oriental hookah stand.

Mr. Jones also exhibited the following ancient documents:—(1) A warrant of Privy Seal, 23 Henry III, for letters patents to make Thomas Griffiths, Welshman, a denizen. (2) Grant from Edward, Prince of Wales, to Rhys ap Griffith of £40 a-year, and also of 40 marks a-year, 48 Henry III, as Governor of Droslyn Castle.* (3) Grant from Edward, Prince of Wales, concerning Thomas Praers de Bertomlegh, French) 9 Edward II. (4) Agreement by Philip de Somerville † with Edward his heir, on his conveyance of some manors in Staffordshire and Nottinghamshire.

* The origin of Droselan, otherwise Dryslyn, Castle, in Caernarvonshire, seems to be involved in great obscurity, although it is conjectured to have been built by the Princes of Dynevor for protecting their adjacent possessions against the incursions of their enemies. Its ruins stand in a very bold situation; the view from which, over the beautiful vale of Towy, cannot be surpassed for variety and grandeur of scenery throughout South Wales. That brave English warrior, Nicholas, fourth Baron Stafford, in an expedition in which he was engaged (1287) against Sir Rese ap Griffith, Governor of that Fortress, (under the annexed royal appointment nearly 600 years old), was killed by the walls thereof falling upon him.

† Sir Philip de Somerville, named in the accompanying ancient charter, was descended from Sir Gualter de Somerville, who came over to England with King William the Conqueror, which monarch bestowed on Sir Gualter very large possessions. In the reign of King Edward the Third Sir Philip held of the Earls of Lancaster, Lords of the house of Tutbury in Staffordshire, amongst other estates, the manor of Thicham, in that county, once celebrated for its singular fitch of bacon custom, like to that of Dunmow in Essex, recently revived by the exertions of Mr. Harrison Ainsworth.

The Chairman read an extract from the Report of the Liverpool Observatory, to the effect that the Secretary of the British Association for the Advancement of Science had agreed to allow the use of its tables and plates to one of our local societies, in illustration of the results of the Liverpool Anemometer. Proof impressions were laid on the table.

The following papers were then read:—

On the Means of Testing Marine Meteorological Instruments. *By John Hartnup, Esq., V.P.**

Results Deduced from Observations taken with the Self-Registering Anemometer and Rain-Gauge, at the Liverpool Observatory, During 1852, '53, '54, '55. *By John Hartnup, Esq., V.P.* †

1*st May*, 1856. ARCHÆOLOGICAL SECTION.

The Rev. Dr. Thom, V.P., in the Chair.

The following gentlemen were duly elected members of the Society:—

Rev. H. Parr, M.A., Vicarge, Taunton.
John Billington Booth, Esq., Preston.

The following Donations were laid upon the table:—

From the Society. Transactions of the Ossianic Society, vol. ii. The Festivities of the House of Conan of Clan Sliebh, in the County Clare; Edited by Nicholas O'Kearney, Esq.

From the Society. Journal of the Kilkenny Archæological Society. Nov., 1855; January, 1856.

From the Society. Memoires de la Societié des Antiquaires de l' Ouest; 1854.

From the Society. Bulletin de la Societié Archæologique de l' Orleanais, No. 23.

From the Archæological Institute. Journal of the Institute, No. 48, for December, 1855.

From the Royal Institution. Report of the Royal Institution for 1855.

From the Free Public Library and Museum Committee. Catalogue of the Library, new edition, 1855.

From the Editor. A Catalogue (with the title pages in full, and illustrative extracts) of Books chained to an old case in St. Anne's Church, Turton, and of a similar collection at Gorton, bequeathed by Humphrey Chetham; Edited by Gilbert J. French, Corr. Mem. S. A. Scot. for the Chetham Society.

From Dr. Kendrick. Antiquarian Slips from the local Notes and Queries in the *Warrington Guardian.*

From Alfred Jon. Dunkin, Esq. Archæological Mine, and History of Kent, parts xxviii, xxix, xxx, xxxi.

From J. N. Crosse, Esq. Rubbing from an ancient brass in the Church of St. Mary, Redcliffe, Bristol, exhibiting John Jay, alderman, his wife, six sons and eight daughters, 1480.

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* Transactions, p. 109. † Transactions, p. 212.

From Dr. Thom. Two additional numbers of the Rambler; Liverpool, 1837.

From an unknown donor. A religious notice, in the form of a play-bill, said to have been posted on the Surrey Theatre, by the Rev. Rowland Hill.

The Secretary laid upon the table a volume for which the Society had subscribed. "'Inventorium Sepulchrale,' an Account* of some Antiquities, dug up in the County of Kent, from 1757 to 1773. By the Rev. Bryan Faussett. Edited from the original MSS. in the possession of Joseph Mayer, Esq., by C. Roach Smith, F.S.A., author of '*Collectanea Antiqua*,' 1856."

Dr. Hume exhibited two gutta-percha gilt seals, part of a collection which he had received from John Hopkins, jun., Esq., of Great Grimsby. The one was the common seal of Oswestry, containing a punning allusion to the name of the town; the other was the Episcopal seal of Richard, [Fleming] Canon of Lincoln, and Bishop in 1420.

Mr. McQuie laid upon the table an engraving showing the French Squadron, commanded by M. Thurot, lying at anchor in Ramsey Bay, after their capture by Elliot, 28th February, 1760. Taken from the original painting by Richard Wright, and by him dedicated to the Mayor, Corporation, and Merchants of Liverpool.

Mr. Crosse exhibited a rubbing from a brass in the Church of St. Mary, Redcliffe, Bristol, representing the brother of Sir Thomas Mead, his wife and daughter, 1520.

The Rev. Thomas Moore exhibited a medallion *temp.* Charles I, the property of Mr. Gath.

The following Paper was then read:—

ON THE ETHNOLOGY OF SOUTH BRITAIN, AT THE EXTINCTION OF THE ROMAN GOVERNMENT IN THE ISLAND.† *By Thomas Wright, M.A., F.S.A., &c.*

8th May, 1856. LITERARY SECTION.

J. T. DANSON, ESQ., V.P., in the Chair.

William Henderson, Esq., of Church street, was duly elected a member of the Society.

John Chapman, Esq., of Hill End, Mottram in Longdendale, late High Sheriff of Cheshire, having signified his wish to remain connected with the Society, was enrolled without election or entrance fee, in accordance with Law xiii.

The following Donations were laid upon the table:—

From the Society. Journal of the Statistical Society, vol. xix part 1, 1856.

From John Mather, Esq. Notes and Queries,‡ vols. xi and xii, 1855.

From David Lamb, Esq. Athenæum, for 1855, in continuation of former donations.

From the Editor. Pamphlet on National paper money, as a legal tender in payment of debts and taxes, 1856.

Mr. Crosse, F.S.S., exhibited a snuff-box from the keel of the Golden Horse frigate, sunk by Van Tromp, in the Royal Naval Yard Chatham, 1666. It was found while excavating in 1824.

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* This Volume is richly illustrated, with a portrait, map, woodcuts, and numerous plates, coloured and uncoloured.

† Transactions, p. 141.

‡ In volume vii, p. 20* a previous Donation is announced as "five volumes." It should have been *ten* volumes, (i to x) for five years, (1850-54.)

Mr. Crosse also exhibited some Roman Coins of the early Emperors.

In illustration of a portion of Macauley's England, Mr. H. A. Bright exhibited two documents. (1) An Autograph proclamation of General Schomberg, dated Lisburn, 1690, shortly before the Battle of the Boyne; (2) A Treasury warrant of William iii countersigned Stephen Fox; concerning the reimbursement of Robert Lord Lucas as to his expenses, "in sending down ten gentlemen (late prisoners in the Tower,) into Cheshire and Lancashire." These were, George* Lord Viscount Molyneux, Sir Thomas Clifton, Sir William Gerard, Sir Rowland Stanley, Sir Thomas Stanley, Peter Leigh of Lyme, Bartholomew Walmsley and William Dicconson, Esqrs.

Mr. Crosse read an extract from a letter, in allusion to the beautiful church of Fairford in Gloucestershire, the twenty-eight windows of which were fitted with stained glass, procured by John Tame, Esq., in 1498.

The following paper was then read:—

ON THE RISE AND PROGRESS OF THE MANUFACTURING TOWNS OF LANCASHIRE AND CHESHIRE.† *By David Buxton, Esq.*

15th May, 1856. SCIENTIFIC SECTION.

REV. DR. THOM, V.P., in the Chair.

The following Donations were laid upon the table:—

From the Society. Proceedings of the Royal Society, vol. vii (Nos. 17, 18, 19, 20.)

From the Society. Transactions of the Philological Society, Nos. vii, viii, ix, x, xi, 1855.

From the Society. Proceedings of the Ashmolean Society, Oxford, 1855.

From Robert Rawlinson, C.E., F.G.S. Report of the General Board of Health on a Preliminary Inquiry respecting,

Southport, Lancashire, 1855.
Camborne, Cornwall, 1855.
Smethwick, Staffordshire, 1855.
Ulverstone, Lancashire, 1855.

From the Author. Sur l' Etablissement d 'une langue Universelle; Discours Prononcé a la Rentrée Solennelle, des Facultes de l' Academie de Caen. Par M. A. Charma, Professeur de Philosophie, &c., Paris 1856.

From Thomas G. Wedgwood, Esq. A volume entitled "Dr. Sacheverell's Tryall," consisting of five folio tracts, 1710.

From James Stonehouse, Esq. The Borough Fund of the Corporation of Liverpool, in account-current with John Wybergh, Treasurer, for the years 1847, '48, '49, '50, '51, '53, '54, '55.

From William Dobson, Esq. Authentic Records of the Guild Merchant of Preston, in the year 1822, with an introduction by J. Wilcockson. Preston 1822.

From the Society. Proceedings of the Royal Geographical Society, Nos. 1 and 2.

From the Society. Journal of the Geological Society of Dublin, vol. vii, parts 1 and 2.

From the Editor. Songs and Carols, from a MS. in the British Museum, of the 15th century. Edited for the Warton Club, by Thomas Wright, M.A., F.S.A., 1856.

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* Caryll [?]
† Transactions, p. 199.

From the Editor. The Farington Papers; edited for the Chetham Society, by Miss ffarington, 1856.

From the Committee of the late Church of England *Institute. Parliamentary Papers, viz.—Reports, 21 vols.; Journals of the Lords, 29 vols.; Journals of the Commons, 101 vols.; Miscellaneous, 13; Total 164 vols.

Mr. Crosse exhibited an ancient black letter Chronicle, containing details of English History from 1108 B.C. to 1578 A.D.; also Sylvanus Morgan on Geometry or Dialling, 1652.

Mr. John Peacock, of Hough Green, Chester, exhibited a large number of Roman and other Antiquities from Chester, some of which had been found so recently as that very day. They embraced the following—

Fibulæ found in Northgate street.
Ditto and Spear Head.
Thuribulum and Spoon.
Silver Coin of Vespasian.
Roman Tile, and part of another Tile, with the letters LEA upon it.
Portion of a Mortarium, with the words MARINUS FECIT.
Roman Stylus (supposed.)
Fibula, from Eastgate street.
Two small Vases.
Antefix, with the letters LEC. XX., and figure apparently of a boar rampant.
Gold Ring, with a Sapphire, from Northgate street.
Coin with inscription "Tetricus" (?)
Irish Farthing of Charles I.
Two Coins of Aurelius.
One supposed Abbey counter.

Mr. Poole exhibited a peculiar breech-loading rifle, self-cleaning, and capable of being fired 400 times in an hour. It is patented by Mr. Bentley.

The Secretary announced that the Excursion of the Society would take place on the 24th of June, to Preston and neighbourhood.

The following papers were then read:—

THE ANCIENT GEOMETRICAL ANALYSIS, ILLUSTRATED FROM THE WRITINGS OF THE LANCASHIRE GEOMETERS.† *By Thos. T. Wilkinson, F.R.A.S.*

ON SOME OF THE RECORDED CHANGES IN THE LIVERPOOL BAY, PREVIOUS TO THE YEAR 1800.‡ *By Joseph Boult, Esq.*

The author, amongst other illustrations, exhibited a chart upon which were laid down the lines of high and low water mark, for the years 1689, 1755, 1813, and 1847; from which it appeared that the coast line from the Rock point to Dove point receded in the first interval, but that the low water line from the Rock point to Leasowe Castle advanced. Westwardly of the Red Noses the advance was considerable; on the other hand westward of the castle and in Hoylake, low water mark has receded. There are remarkable changes also on the north side of the Channels, the Burbo bank of Collins's survey being split up into several patches on Eyes's chart. In place of the shelf or bar stated by Collins to be all dry at low water, and extending from Dove spit to Burbo bank, Eyes gives a channel of from one and a half to seven fathoms deep.

The author then entered upon the subject of the coast at Wallasey Leasowes, and

* By the "Literary and Scientific Institutions Act," (17 and 18 Vic. cap. 112, sec. 30,) it is enacted that when any such society is dissolved, its remaining property shall be handed over to some other society or societies, for the promotion of similar objects.

† Transactions p. 75.

‡ The reading of this paper was omitted, owing to the lateness of the hour. The following is an abstract.

reviewed the evidence in favor of the received opinion that an ancient lighthouse existed there. He entered into the subject in considerable detail, quoting various writers and acts of parliament, and concluded that the so called old lighthouse must have been a shortlived twin brother of the patriarch who still holds his ground at Wallasey Leasowes, having no existence prior to 1761, and probably being defunct and washed away within a few years afterwards.

On the Eastern margin of the Bay considerable changes also had taken place, between the date of Collins's survey and the year 1800. The channel had moved nearly its own breadth, or 1200 yards westward. In the course of his investigations, the writer had stumbled upon traces of a village named Altmouth, situated at the junction of the river Alt and the sea. This village is mentioned by Camden. Mr. Edward Littledale had politely afforded the opportunity of examining the records of the Alt commission in their printed volume. From these it appeared that formerly considerable apprehensions were experienced lest a portion of the locality might be inundated, in consequence of the shifting of the sandhills, which formed a secure barrier. Measures were therefore adopted to prevent the moving of the hills. Mr. Boult conjectured that the village had been deserted in some panic, or had possibly been overwhelmed by some sand drift, as at Nineveh, and so deserted and lost.

CONCLUDING ADDRESS. *By J. T. Danson, F.S.S., V.P.*

Gentlemen, called to address you on the close of an eighth session, I find the task as easy and agreeable as it is honorable. I have nothing to remind you of that is not pleasant to remember. We still prosper; and our prosperity exhibits all the conditions of a natural and permanent progression. It is alike removed from the zeal that leads to exhaustion and the indifference that augurs decay.

The Session has afforded us 20 meetings, and we have heard read and have discussed as many papers: some of them admirable alike in design and execution, and all of them worthy of the attention they have received. I shall make no effort to place these papers in the order of their respective merits. Where, as here, excellence is in any degree general, particular eulogy, awarded on the dictum of individual taste, might well be deemed invidious. Nor would I willingly move one step towards enduing the friendly competition hitherto so fruitful of good, with the meaner aspect of personal rivalry.

Their subjects have had relation, more or less distinct, to our three lines of study—Archæology, Literature, and Science—in proportions not very far from equal. Such difference as there is, however, affords some ground for the inference that Archæology, our first chosen subject, is receiving least, and science, our last chosen, receiving most attention. In view of the care and skill constantly evinced by our honorary secretary in the arrangements for our meetings, this preponderance, slight as it is, can hardly be deemed accidental. And perhaps we should do well to receive it as a warning that, in proportion as our Society expands its operations, the topics most nearly allied in character with the interests of the passing moment are likely, if our archæological and literary members do not come to our rescue, to usurp an undue share of our time. And it were surely not well that the hours we spend here, saved—as for most of us they must be—from days of needful and unchosen labour, should be devoted, in anything more than their due proportion, to topics suggested by, or suggestive of, the very toil from which we here seek relaxation. Having myself aforetime been somewhat urgent in favor of our scientific section, it may the better become me to mark the earliest indication of any such tendency.

Touching more generally the results of the Session, I am conscious that I shall best interpret the sense of the Society in speaking with much modesty. All we have yet achieved must needs be dwarfed by comparison with what we have openly proposed, and do earnestly propose, yet to do. Thus much I may say—that our numbers have been largely increased, and that, as the forthcoming volume of our Transactions will prove, the larger body has displayed a commensurate increase of activity and power.

In our Archæological Section, the earliest periods of British history have received additional illustration from Mr. Hinde's paper on The Ancient History of Northumbria, and Mr. Harwicke's on The Roman Remains at Walton-le-dale; and the mediæval and modern periods, find able contributions in Mr. Marsh's Account of the Warrington Grammar School, Mr. Stonehouse's Day in Low Furness, and Mr Boardman's Notes on Liverpool a Hundred Years ago.

The papers of the Literary Section have been even more various. Mr. Buxton on The Saxon Element in Poetic Composition, and Mr. Ramsay on The Character of Hamlet, have given to criticism the first place. We are also indebted to Mr. Buxton for an historical paper on The Rise of the Manufacturing Towns of our District, and to Mr. Moore for a practical and philosophical essay on The Poor-law System as it affects Education and Morals; while Mr. Dove's exhibition of, and comments on, some original letters of Dr. Franklin have contributed to render more vivid and more truthful our conceptions of the character of that great man. In the statistical—the least inviting—department of the Section, we have had two elaborate papers on the population of Liverpool and of the Manchester District.

The Scientific Section has received from Mr. Tudor some valuable Zoological Notes on the Banks of the Mersey; from Mr. Moore illustrations of several curious facts connected with mammalia; and from Mr. Gregson the continuation of a remarkable paper on The Lepidoptera of the Liverpool District. In microscopic botany, we are indebted to Mr. Sansom for a precise description of a fungoid disease in the pear. Mr. Hartnup has favored us with an excellent practical description of the best marine meteorological instruments, and of the means of testing their accuracy—a subject, the importance of which in this locality can hardly be over-estimated; and has also given to us the results obtained during four years, from the self-registering anemometer and rain gauge. And in two of the most important papers read during the Session, (those of Dr. Oppert, on The Cuneiform inscriptions of Ancient Babylon, and of Mr. Wright, on The Ethnology of Britain at the close of the Roman Period,) we have had gratifying evidence of the recognition of our labours by men to work in association with whom is itself an honor. Of the paper read this evening it were needless of me to say one word. It is before you and you have shown that you know all its value.

This enumeration cannot be made without some feeling of pride; but it is of more importance to remark that there may—unless I am much mistaken—be gathered from the records of the closing Session evidence in no degree faint or doubtful that there is amongst us a very general disposition to use, and to seek to increase, our knowledge for purposes ever growing higher and wider as we advance—a better, a more elevated, and a more just appreciation of the value of knowledge for its own sake, and of the very search for it as an ennobling means of mental discipline. To wish that this tendency may gather strength with every succeeding Session, and that under its influence we may continue to regard the future with hopes ever growing brighter and better founded as we proceed, is only to desire that our Society may realise at once its legitimate destiny, and the loftiest to which we can reasonably aspire.

Thanks were then voted to the Rev. Dr. Thom and Mr. Danson, as the two vice-presidents who had been most frequently in attendance. Thanks were also voted to Dr. Hume, and the proceedings terminated.

APPENDIX.

EXCURSION TO PRESTON.

On Tuesday the 24th of June, the members and their friends undertook an excursion to Preston; in compliance with the expressed wish of several gentlemen connected with that town. The party left Liverpool by an early train, and arrived at Preston shortly after nine o'clock. A local committee of which Mr. W. Dobson was secretary, had made arrangements for the day, and several of its members attended at the station to receive the visitors. Other members of the Society, from Manchester, Lancaster, Warrington, Burnley, &c., joined them shortly afterwards.

The committee had brought together, for the occasion, an interesting collection of local objects; forming a temporary Museum, illustrative of Preston and its neighbourhood.* These were laid out in the rooms of the Institution Avenham, the use of which had been granted for the purpose of the meeting. The inspection of the collection was the first part of the proceedings: and here the visitors were joined by a large number of ladies and gentlemen of Preston and the neighbourhood.

An adjournment then took place to Dr. Shepherd's† library in the same building, where a *dejeuner* was prepared by the hospitable arrangements of the local committee. Before retiring, the company resolved that they would confine their attention to Walton-le-dale and Penwortham; leaving their visit to Ribchester to take place on some other occasion.

Crossing the Ribble from Avenham Terrace, the party proceeded to Walton, distant about a mile. Here the precise positions were pointed out in which the Roman remains‡ had been discovered; and Mr. Hardwick drew attention to the terraces, the former bed of the river, &c. Engravings of the subject were handed round for inspection; and some of the objects themselves, which had not been procured for public purposes.

A pleasant walk along the bank of the river brought the company to Penwortham, about an equal distance on the other side of the town. Permission had been obtained, to examine the extraordinary mound known as the "Castle Hill," on which a Saxon castle is said to have stood. A large trench had been cut on the previous day, under the superintendence of Mr. Willacy, the agent for the property. Objects in wood iron and lead had been discovered, with numerous bones of animals. On this occasion, a wooden structure of oak and hazel was discovered; apparently the framework of a house inside the hill. The floor was paved with river boulders. [The excavations were continued on the following day, when several additional objects were brought to light, including a complete spur, apparently of about the 10th century.] An account of them, with illustrations, will be given in the next volume of the Society's transactions.

Returning to Preston at four o'clock, between fifty and sixty ladies and gentlemen sat down to dinner in the Assembly-room of the Bull Hotel. The chair was occupied by Richard Threlfall, Esq., Mayor of Preston. Several interesting sentiments were proposed and suitably responded to. The members from a distance retired in time to meet their respective trains; and the company separated finally about eight o'clock.

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* The principal contributors were, the Mayor, the Town Clerk, Miss Farington of Worden, R. Townley Parker, Esq., M.P, the Ribble Company, the Council of the Institute, the Rev. W. Thornber, Mr. Dearden, Mr. Hardwick, Mr. Hoghton of Bold, Alderman Brown, &c.

† Dr. Shepherd was Mayor of Preston in 1756.

‡ Transactions, p. 127.

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